PUBLIC HORKS CENTER PEARL HARBOR FLEET MOORINGS UNDERMATER INSPECTION REPORT(U) NAVAL FACILITIES ENGINEERING COMMAND HASHINGTON DC CHESAPEAKE DIV SEP 83 CHES/NAVFAC-FPO-1-83(22) F/G 13/2 AD-8167 247 1/3 UNCLASSIFIED NL



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PUBLIC WORKS CENTER PEARL HARBOR FLEET MOORINGS UNDERWATER INSPECTION REPORT

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SEPTEMBER 1983

OCEAN ENGINEERING
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CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, D.C. 20374

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SECURITY CLASSIFICATION OF THIS PAGE	
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la. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION AVAILABILITY OF REP. Approved for public release; distribution is unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER FPO-1-83(22)	5. MONITORING ORGANIZATION REPORT #
6a. NAME OF PERFORM. ORG. 6b. OFFICE SYM Ocean Engineering & Construction Project Office CHESNAVFACENGCOM	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and Zip Code) BLDG. 212, Washington Navy Yard Washington, D.C. 20374-2121	7b. ADDRESS (City, State, and Zip)
8a. NAME OF FUNDING ORG. 8b. OFFICE SYM	9. PROCUREMENT INSTRUMENT INDENT #
8c. ADDRESS (City, State & Zip)	10. SOURCE OF FUNDING NUMBERS PROGRAM PROJECT TASK WORK UNIT ELEMENT # # ACCESS #
11. TITLE (Including Security Classificati Public Works Center Pearl Harbor Fleet Moo 12. PERSONAL AUTHOR(S)	
13a. TYPE OF REPORT 13b. TIME COVERED	14 DAME OF DED (WOODD) 15 DAGE
FROM TO	14. DATE OF REP. (YYMMDD) 15. PAGES 83-09 206
16. SUPPLEMENTARY NOTATION	
FIELD GROUP SUB-GROUP Moorin	T TERMS (Continue on reverse if nec.) g inspection, Underwater inspection Works Center Pearl Harbor, Fleet gs
	5.
19. ABSTRACT (Continue on reverse if neces During the period 3 through 13 May 1983, a and divers from Underwater Construction Te inspection of th 42 fleet moorings operate Harbor. Eighteen of the moorings were fou 20. DISTRIBUTION/AVAILABILITY OF ABSTRACT SAME AS RPT. 22a. NAME OF RESPONSIBLE INDIVIDUAL	CHESNAVFACENGCOM Engineer-in-Charge am Two (UCT TWO) conducted an d and maintained by PWC Pearl nd to be in good condition, (Con't)

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three should not be used due to major discrepancies, and twenty-one were found to be in satisfactory condition for continued use within the constraints of their load capacities.

ABSTRACT

During the period 3 through 13 May 1983, a CHESNAVFACENGCOM Engineer-in-Charge and divers from Underwater Construction Team Two (UCT TWO) conducted an inspection of the 42 fleet moorings operated and maintained by PWC Pearl Harbor. Eighteen of the moorings were found to be in good condition, three should not be used due to major discrepancies, and twenty-one were found to be in satisfactory condition for continued use within the constraints of their load capacities.

Fleet moonings. R

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PUBLIC WORKS CENTER (PWC) PEARL HARBOR FLEET MOORING UNDERWATER INSPECTION REPORT

1.0 INTRODUCTION

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- 1.1 Background. Under the COMNAVFACENGCOM Fleet Mooring Maintenance (FMM) Program, CHESNAVFACENGCOM has been assigned the responsibility to plan for and conduct periodic diver inspections of fleet moorings worldwide. In carrying out this responsibility, CHESNAVFACENGCOM designated an Engineer-In-Charge (EIC) to provide inspection planning and onsite technical direction for the underwater inspection of 42 fleet moorings located at Pearl Harbor. The actual underwater portion of the inspection was performed by divers of Underwater Construction Team Two (UCT TWO), which was tasked to conduct the inspection by CINCPACFLT message 210331 2 AUG 82. The inspection of these moorings was conducted during the period 3-13 May 1983.
- 1.2 <u>General Mooring Descriptions.</u> PWC Pearl Harbor currently operates and maintains 42 fleet moorings. These consist of the following classes of moorings:

Class		Number
Α		6
С		6
D		10
F		8
G		12
	Total	42

The geographical locations of these moorings in relation to the Pearl Harbor complex are shown in Figure 1. The majority of these moorings are positioned in the Middle Loch, where they are used to moor those inactive ships assigned to the Inactive Ship Maintenance Facility. Enlarged drawings of this Loch showing the intended positions of the moorings are contained in Figures 2 through 4.

As a result of the passage of Hurricane Iwa through Pearl Harbor on 23 November 1982, mooring D8S failed and a number of others were displaced various distances. A number of the moorings in the Middle Loch (D5N, D5M, D5S, D6N, D6M, and D6S) are not currently in the intended positions as shown in Figures 2 through 4. When funds become available, these displaced moorings will be reinstalled in their correct locations. PWC Memorandum 1011 of 30 November 1982, a copy of which is contained in Annex C, is a report on the effects of the hurricane on the positions of the installed fleet moorings.

The designs of the PWC Pearl Harbor mooring systems and their mooring components vary greatly from the standard designs contained in DM-26. For example, the anchors of all of these moorings consist of concrete clumps, concrete anchors, or combinations of both. In addition, the reported classes of most of the moorings are significantly lower than the classes desired when these moorings were initially installed. PWC Pearl Harbor moorings were downgraded in classification as a result of discrepancies noted during a November 1979 underwater inspection.

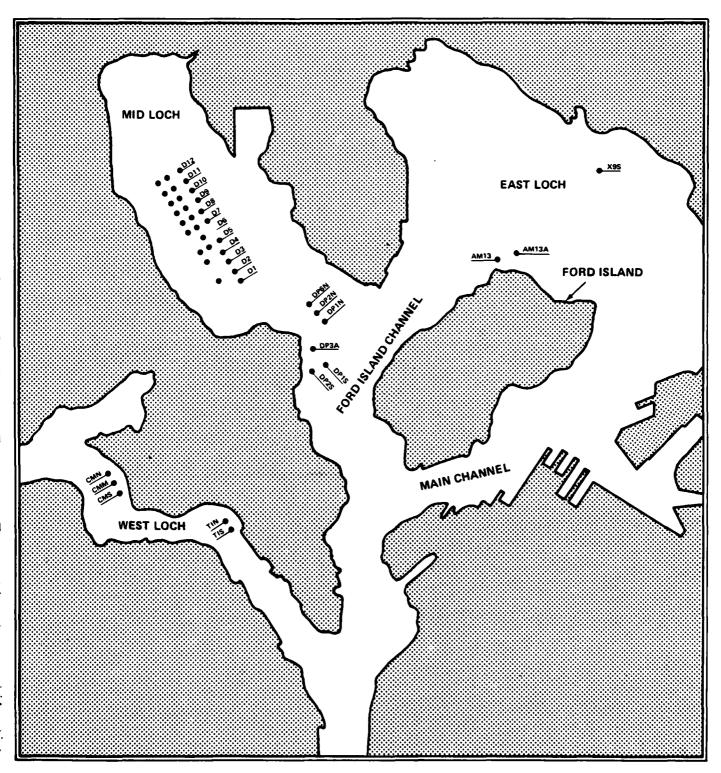


FIGURE 1. PEARL HARBOR FLEET MOORING LOCATION PLAN

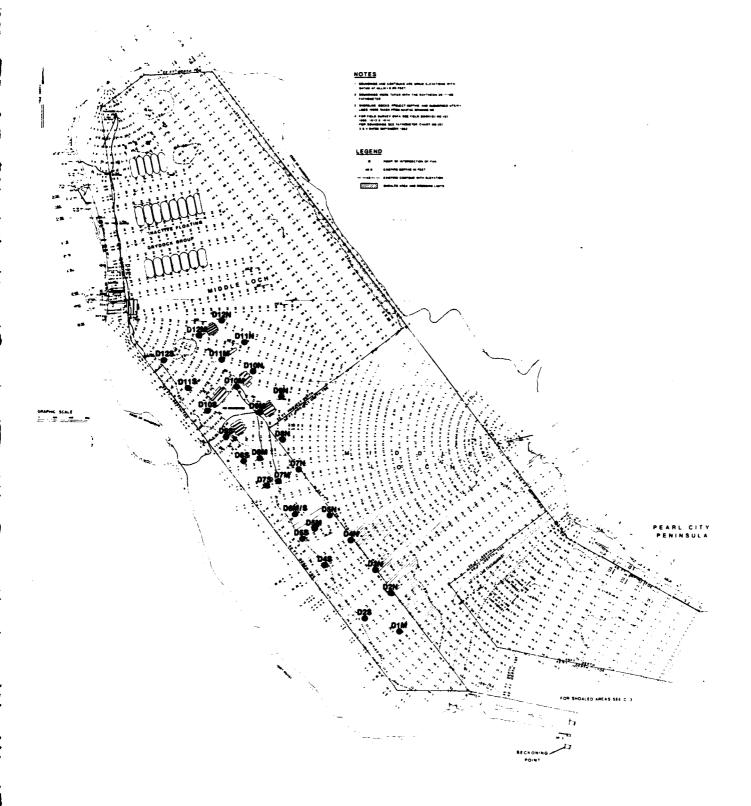


FIGURE 2. FLEET MOORING LOCATIONS IN MIDDLE LOCH

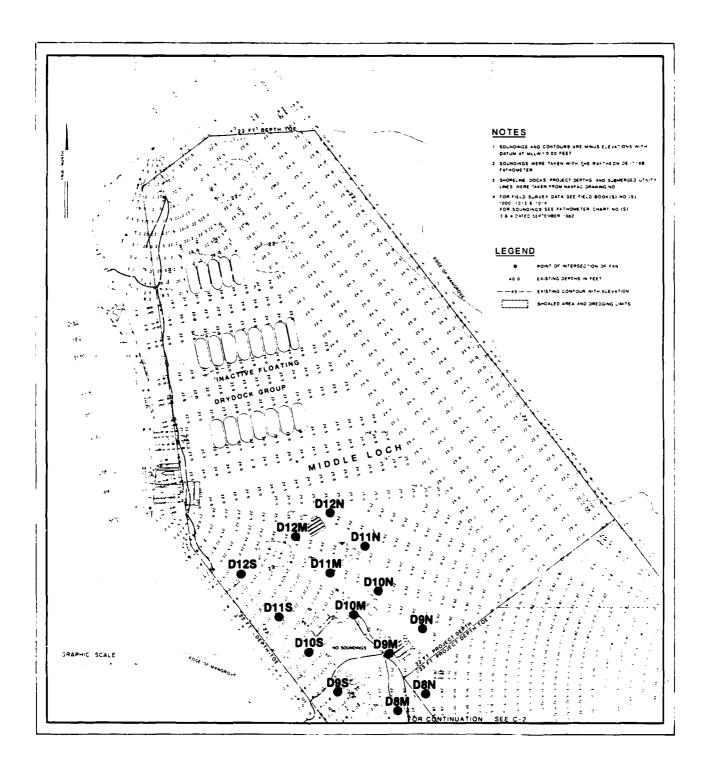


FIGURE 3. FLEET MOORING LOCATIONS IN NORTH MIDDLE LOCH

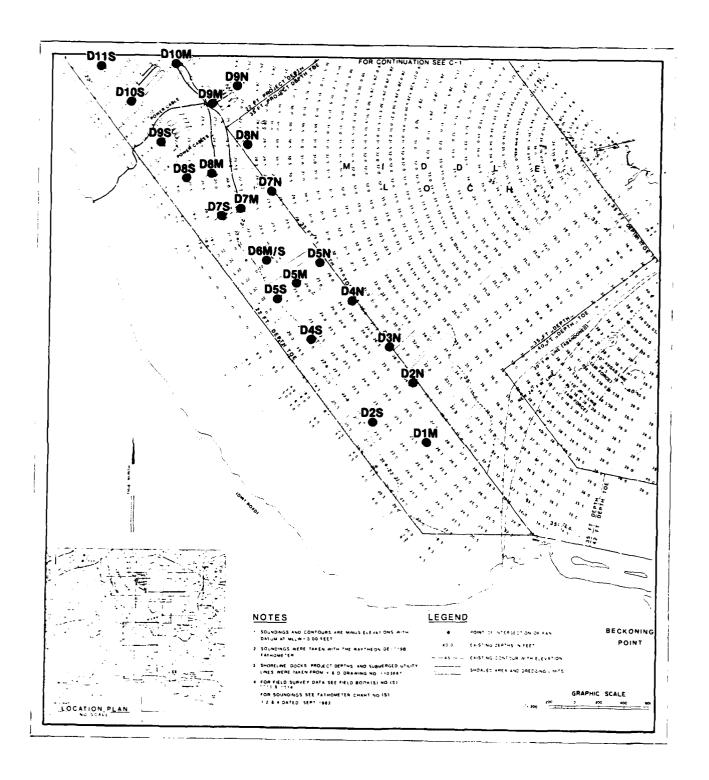


FIGURE 4. FLEET MOORING LOCATIONS IN SOUTH MIDDLE LOCH

2.0 INSPECTION PROCEDURES

2.1 General. The purpose of the mooring inspections was to determine the general physical condition of buoys and chain assemblies and, when possible, to verify or update existing as-built and maintenance records. Divers inspected only a portion of the submerged buoy hull and chain assemblies in order to compile a general description of the mooring's condition. The existence of fairly consistent measurements during this inspection provides a good indication of the mooring's overall condition. It should be kept in mind that periodic underwater inspections are intended as an expedient and relatively inexpensive supplement to accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving recovery of the mooring and the measurement and evaluation of each component.

Chain wire diameter measurements are used to evaluate the condition of a mooring. After cleaning to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware was taken in order to determine the amount of deterioration due to corrosion and wear. "Single link" measurements were taken where chain was slack to detect corrosion loss. "Double link" measurements were taken where two links connect under tension to detect the combined effects of corrosion and wear. Chain links and other components which measure 90 percent or greater of original wire diameter are considered to be in "good" condition; a measurement between 80 and 90 percent of original diameter is considered "fair" condition and is cause for the mooring to be downgraded in classification; any measurement less than 80 percent is considered "poor" and is cause for the mooring to be declared unsatisfactory for fleet use.

Standard underwater inspection procedures do not call for the inspection of any part of the mooring which has been buried. Ground legs and risers were observed only to the point at which they became buried; no attempt was made to locate and inspect anchors or other mooring materials which were not readily visible.

2.2 Buoys.

- 2.2.1 Buoy Geographic Position. PWC Pearl Harbor has contracted for a commercial survey of the moorings due to hurricane caused damage and displacement. In view of this impending survey, the inspection team did not attempt to determine the geographic positions of the buoys. However, the EIC requested PWC Pearl Harbor personnel to forward a copy of the survey results to CHESNAVFACENGCOM.
- 2.2.2 Buoy Topside. Each buoy was inspected to determine its general condition. The buoy markings were checked for conformance to those noted in applicable charts. The diameter and freeboard of the buoy were recorded. Physical damage such as holes, dents, or listing was described. Figerglass-coated buoys were inspected for cracks, wear, peeling, or rust-bleeding.

Buoy fenders and chafing rails were checked for integrity and secure connection to the buoy. Buoy top jewelry was measured with calipers to find the overall outside dimensions and areas of most severe reduction in wire size.

2.2.3 Buoy Lower Portion. Divers inspected the buoy below the waterline. The thickness of marine growth was recorded, 1-foot-square areas were selected and cleared of growth without damaging the paint or fiberglass, and the condition of the paint or fiberglass was noted.

- 2.3 <u>Risers</u>. To determine chain wear, each riser chain was inspected by taking three consecutive measurements, using 2 3/4-inch go/no-go gauges. When the riser deviated from 2 3/4 inches, calipers were used to determine the actual wire diameter of the riser.
- 2.4 <u>Ground Rings</u>. When visible, ground rings were examined for general and localized wear. Caliper measurements were made of the wire size in the region of suspected wear. The depth of water at the ground ring was recorded by the divers.
- 2.5 Ground Legs. In cases where ground legs were visible, three consecutive double link measurements were attempted at the ends and near the center of each leg. During this inspection, however, only portions of a small number of legs were visible.
- 2.6 Anchors/Sinkers. Most anchors and sinkers were buried. The hairpins of the few that were partially visible were measured, and the results reported by the divers.

3.0 . INSPECTION SUMMARY

An in-depth discussion of the inspection results is presented in Annex A. Annex B contains photographs, and Annex C contains a copy of the preliminary report of the results of the inspection.

The data gathered during the inspection indicates the following:

o Of the 42 mooring systems inspected, 18 were found to be in good condition, 3 are now considered unusable due to major discrepancies, and 21 were found to be in satisfactory (fair) condition. Table 1 presents the current status of the Pearl Harbor fleet moorings.

Table 1. PWC Pearl Harbor Fleet Mooring Status

Mooring Number	Current Mooring Class	Good Condition	Fair Condition (Downgrade)	Poor Condition (Unusable)	<u>Comments</u>
AM13	D			X	Ground legs displaced/ anchors side by side
AM13A	С			Χ	Riser worn to 55% of original size
CMN	G	X			Good condition
CMM	G			X	Riser worn to 25% of original size
CMS	G		Х		Riser badly worn but satisfactory for G class
D1M	G		X		Riser badly worn but satisfactory for G class
D2N	D		χ**		Riser badly worn-down- grade to F class
D2S	G		X		Riser worn but satis- factory for G class
D3N	G		X		Riser worn but satis- factory for G class

Table 1. PWC Pearl Harbor Fleet Mooring Status (Continued)

Mooring Number	Current Mooring Class	Good Condition	Fair Condition (Downgrade)	Poor Condition (Unusable)	Comments
D4N	G		X		Riser worn but satis- factory for G class
D4S	G		X		Riser badly worn but satisfactory for G class
D5N	F	·	X		Buoy listing badly-needs repair
D5M	G		X		Riser badly worn but satisfactory for G class
D5S	G		X		Riser badly worn but satisfactory for G class
D6M/6S	D	Χ			Good condition
D7N	Ď	х *			Good condition
D7M	Č	χ̂*			Good condition
D7S	ă	χ̂*			Good condition
D73 D8N	Ď	χ*			Good condition
D8M	Č	X*			Good condition
D8S	D	X*			Good condition
	A	Λ~ X*			Good condition
D9N		Λ~ X*			Good condition
D9M	A	Λ~ X*			Good condition
D9S	A	۸*	X		
D10N	F				Riser badly worn but satisfactory for F class
D10M	F		X		Riser badly worn but satisfactory for F class
D10S	F		X		Riser badly worn but satisfactory for F class
D11N	D		X		Riser badly worn but satisfactory for D class
D11M	D		X		Buoy needs repair. Top jewelry detach needs
D11S	D		X		replacement Riser worn but satis-
D12N	F		X		factory for D class Buoy needs refurbishment
D12N	F		â		Riser worn but satis-
	-				factory for F class
D12S	F		X		Riser worn but satis- factory for F class
DP1N	Ą	X*			Good condition
DP1S	A	Х*			Good condition
DP2N	C	Х*			Good condition
DP2S	С	X*		•	Good condition
DP3A	F		X		Measurements not taken.
DP6N	С		X		Satisfactory for F class Riser worn but satis-
U , 411	-		•		factory for C class

Table 1. PWC Pearl Harbor Fleet Mooring Status (Continued)

Mooring Number	Current Mooring Class	Good Condition	Fair Condition (Downgrade)	Poor Condition (Unusable)	Comments
TIN	G	X			Riser worn but satis-
T1S	G	X			factory for G class Anchor hairpin worn but
X9S	Α	<u> </u>			satisfactory for G class Good condition
Totals:		18	21	3	

^{*}Mooring overhauled during the past 18 months.

- o Of the 18 moorings found to be in good condition, 14 were overhauled during the past 18 months.
- o Of the 21 moorings found to be in fair condition, only one should be downgraded. Mooring D2N has excessive riser chain wear and should be downgraded from a class D to a class F moooring. The other 20 moorings reveal significant chain wear, but because oversize chain was used in the as-built configurations, they still meet the requirements set forth in DM-26 for their particular class designations.
- o Buoy D11S is the only one which was found to have a tension bar. The other 41 buoys contained hawsepipes.
- o The exterior of Buoy D5N shows evidence of damage, and the buoy is riding on its side (a 90-degree list). The internal watertight integrity of this buoy is highly questionable.
- o The top link of the riser chain in Mooring D12N is worn to less than 75 percent of its original wire diameter. This mooring buoy has a 60-degree list, and its chafing rail has rusted away.
- o The chafing rail and top deck plate of Buoy D12M are about 50 percent rusted away and a detachable link in its top jewelry is worn to less than 80 percent of its original wire diameter.
- o The ground legs of all but portions of three moorings were completely buried in the bottom.
- o Although the exterior of Buoy D11N appears to be in satisfactory condition, its internal integrity is questionable since the buoy is floating on its side.
- o The fenders of five mooring buoys (AM13A, D5N, D6M/6S, D11M, and D12S) are either damaged, loose, or missing sections.

^{**}Riser worn to 1 1/4 inches from original 2 3/4 inches (45 percent). Downgrading to F class mooring recommended.

- o Three moorings (AM13, AM13A, and CMM) were found to be in poor condition with each having at least one major deficiency.
- o Cathodic protection systems are not installed on any of the moorings.
- o All of the moorings are in relatively shallow water with the majority being in 30 feet of water or less.
- o Six of the buoys (AM13, D2N, D3N, D10M, D12N, and D12M) have medium-to-heavy rust on their top deck plates.
- o The riser chains of 11 moorings were measured to be less than 80 percent of their original wire diameters.

Detailed information concerning the inspection of each mooring can be found in Annex A.

4.0 COMMENTS/RECOMMENDATIONS

As a result of the evaluation of the data gathered during the inspection, the following comments/recommendations are pertinent:

- o The three mooring systems found to be in poor condition (AM13, AM13A, and CMM) should be scheduled for removal and overhaul at the earliest practical time. Until these actions can be accomplished, these moorings should not be utilized.
- o Fleet Mooring D2N has excessive riser chain wear and should be downgraded from a class D to a class F mooring.
- o Buoys D5N, D11N, and D12N should be thoroughly examined and checked in order to determine the causes of their abnormal lists.
- o The worn top link of the riser chain in Mooring D12N should be replaced with a new link.
- o Buoy D12M should be recovered and brought ashore for refurbishment.
- o The fender systems of five of the mooring buoys (AM13A, D5N, D6M/6S, D11M, and D12S) should be repaired/replaced as required.
- o Although the 21 moorings which were determined to be in fair condition should have sufficient capacity to withstand the maximum loads of their current mooring class designations, these moorings should be overhauled and upgraded as soon as feasible in order to meet the original mooring class requirements as shown in the PWC Pearl Harbor Fleet Mooring Data Sheets contained in Annex A.

ANNEX A

MOORING INSPECTION RESULTS

This Annex contains the following information for each mooring:

- o A summation of inspection data obtained by the CHESNAVFACENGCOM EIC and UCT TWO divers;
- o A diver data reporting form;
- o A Fleet Mooring Data Sheet which was provided to CHESNAVFACENGCOM by PWC Pearl Harbor in April 1983; and
- o A schematic drawing of the mooring.

INSPECTION RESULTS

AM 13

Buoy

This is a 12-foot-diameter drum-type buoy with 6-foot-high side plating. The top and bottom fenders and the chafing rail are made of timber and are all in good condition. The buoy has a hawsepipe through which passes 2 3/4-inch riser chain. The top of the buoy is moderately rusted, and the buoy has a slight list which could indicate a leak in its watertight integrity.

Riser

The riser chain measured betwen 80 and 90 percent of its original 2 3/4-inch wire diameter. The ground ring was located at a depth of 20 feet, and its wire diameter measured to be 2 5/8 inches or only 73 percent of its initial 3 1/2-inch diameter. In addition to two ground legs, the ground ring has a 20,000-pound concrete sinker attached to it with a connecting link.

Ground Legs

This mooring has two ground legs each of which was measured to be greater than 90 percent of original wire diameter. Although both legs are partially buried, their upper and lower ends were visible.

Anchors

The two 60,000-pound concrete anchors are located side by side in 2 to 3 feet of water near Ford Island and bear about $135^{\circ}M$, 85 feet from the buoy. Each ground leg is joined to a concrete anchor hairpin by a detachable link. The top sections of both anchors are above the surface of the water. The hairpin of one anchor is worn to 1.7/8 inches from its original size of 2.1/4 inches.

Recommendations

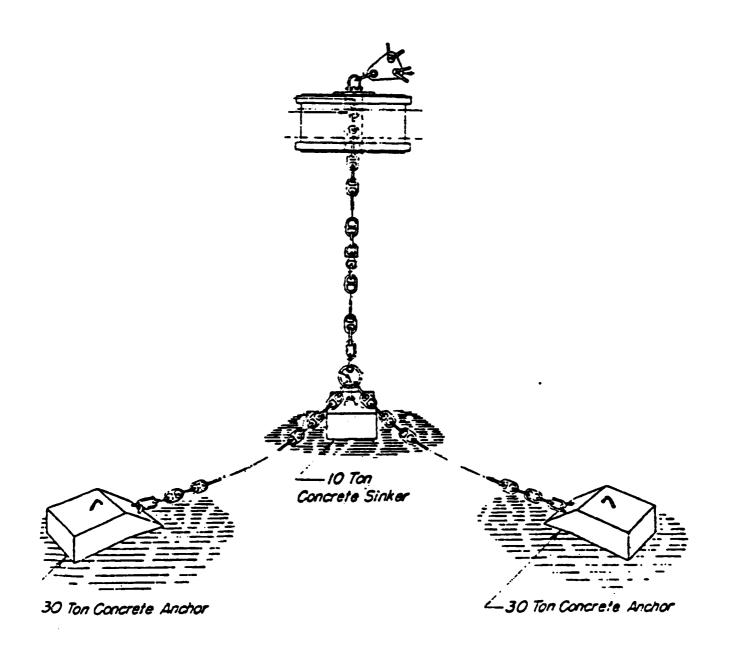
This mooring is in unsatisfactory condition for continued fleet use because the anchors and buoy are displaced, and the ground ring measures below 80 percent of its original wire diameter. Recommend that the mooring be recovered, inspected, overhauled, and reinstalled in its proper location.

OOBING N	MOORING NO. AM 13	CLASS:	J		-10CA	10 S	420	S. LA	7	22.20	LOCATION: FIRED 15. LAT: 21 22 30.5 LONG: 157 57 58
VATER DEPTH:	TH: 18,	Ì	ANCHOR	SIZE/T	IYPE: Z	- 60K	# CON	C, BUOY	TYPE:	\$,21	ANCHOR SIZE/TYPE: 2-60K# CONC, BUOY TYPE: 12'4 X 6' HAWSEPIPE
OTTOM TYPE:	PE: SAND	_	E MUD		CLAY		CORAL		□ ROCK	Visib	Visibility $\sim 6^{\prime}$ D = depth NI = not inspected, inaccessit
						CONC	CONDITION				
CON	COMPONENTS	ž	NEW	Š	SINGLE LINK &	INK %	od	DOUBLE LINK %	*	٥	COMMENT
				8	98	88	\$	90	-08		
BUOY	BUOY HARDWARE										TOP OF BUDY BUSTED. HATCHES OK
JOINING	2 LINK	7									NO FIBERGLASS
6ROU	SROUND RING	7									WOOD FENDER GOOD
ALO VISIBLE	ILE NEAR)										PUB RAIL: 6000
											SLIGHT LIST ON BUOY
	NEAR BLIOY		23"					井	-	10P	23/4 GO/NO. 60 6AUGE
RISER	MIDDLE		_							B	
	NEAR GRD RG				4			存		15	
GRC	GROUND RING							7		20	25" DIA. FROM LARGEST 32" DIA
Granda	LIPPER END			2%	2		S S				
LEG -	MIDDLE										ANCHORS ARE AWASH, SIDE.
V .	ENTERS BOTTOM			2.12				•			BY SIDE IN ~2 ' OF WATER @
GROUND	UPPER END										
LEG NO B	MIDDLE			2%,			5%'	7/5			HAIRPIN ON ANCHOR MEASURED
	ENTERS BOTTOM		-	23/4			576				AT 13/8" FROM ARIG. 21/4"
Control	UPPER END										
TEG TEG	MIDDLE										
	ENTERS BOTTOM										
CBCHAN	UPPER END										
166	MIDDI E				•						
	ENTERS BOTTOM										
DA1E:	5.5.83	ENGIN	ENGINETH IN CHANGE: THOMAS	CHARG		400	DN	á	DIVERS: AUSTIN	305	TIN /REIST

FLEET MOORING DATA SHEET

LAT. COORD. (N) =
$$21^{\circ}-22^{\prime}-30.5^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-57^{\prime}-38.0^{\circ}$

SINKER =
$$\frac{1}{4}$$
 WT. OF SINKER = $\frac{20,000}{4}$ PADEYE SIZE = $\frac{24}{4}$



MOORING AM13 SCHEMATIC DRAWING

INSPECTION RESULTS

AM 13A

Buoy

The buoy is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. One section of the top wooden fender is missing but the lower fender and chafing rail are in good condition. Above the water line, the buoy is moderately rusted and some pitting is evident. Below the water line the buoy's hull is covered with moderate marine growth. Top jewelry consists of a shackle and an anchor joining link.

Riser

Just above the mud line, the riser chain is badly worn. One single link measurement in this area showed that the chain was worn to about 55 percent of its initial size while a double link measurement was 3 3/8 inches, about 61 percent of the original 2 3/4-inch wire diameter of the chain. The riser is covered with about 2 inches of marine growth and enters the bottom about 39 feet below the surface of the water.

Anchor

This mooring consists of only a buoy, riser chain, and anchor. The anchor was not visible and could not be inspected.

Recommendations

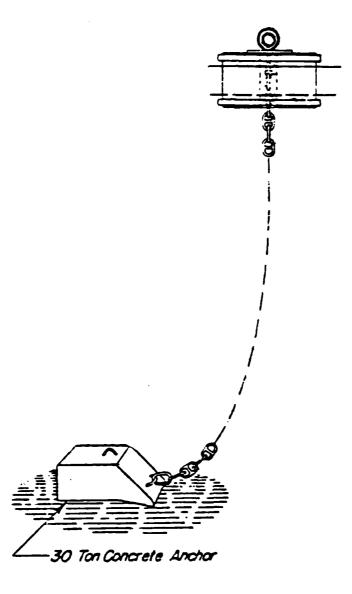
Due to the badly worn riser chain, this mooring is in unsatisfactory condition for continued fleet usage. Recommend that the mooring be recovered and overhauled and replaced with new material.

OORING N	MOORING NO. AMIZA		CLASS	4		LOCAT	10N: FD	JABC I	5. LA1	2,12	2,7%	LOCATION: FORD 15, LAT: 21.22,31.81,0NG: 157°57'34.3"
NATER DEPTH:	Ë	20		ANCHOR	SIZE/TY	<u> </u>	200	2007 L	BUOY	TYPE: J	4	ANCHOR SIZE/TYPE: 1. DUKA CUNC. BUOY TYPE: 1.40 NO HANSE FIFE
SOTTOM TYPE:		D SAND	٥	E TAUD		CLAY	1	OCORAL		□ ROCK	Visibility	ity (2 D = depth NI = not inspected, maccessible
							CONDITION	ITION				
COM	COMPONENTS		ž	NEW	SH	SINGLE LINK %	NK %	noa	DOUBLE LINK %	K K	O	COMMENT
					90+	+08	-08	+06	90+	-08		
BUOY	BUOY HARDWARE	RE										WOOD FENDER: SECTION BROKEN
SHACKLE	KLE		7									NO FIBERGLASS; HATCHES OK
GEDUND RING	D PIN)5	7									RUB RAIL:0K
NO VISIBLE WEAR	IBLE	VEAR)										MODERATE RUST & PITTING AT
												WATERLINE & BELOW
	NEAR BUOY	OY		23.	77			77			TOP	
RISER.	MIDDLE					33			77		20,	23"60/NO-60 GAUGE
	NEAR GRD RG	D RG		→			7			7	30	39 ONE MEASUREMENT S/L 12"/DL 33"
GRO	GROUND RING	,.	7									BURIED
OWN	UPPER END	g.	N/A									
LEG LEG	MIDDLE		_	-								
. .	ENTERS BOTTOM	OTTOM					1					
CALL LAND	ON BERNO	Q										
LEG NO E	MIDDLE											
	ENTERS BOTTOM	MOTTOM										
941000	UPPER END	O										
LEG LEG	MIDDLE											
) :	ENTERS BOTTOM	юттом										
000000000000000000000000000000000000000	UPPER END	10										
LEG NO D	MIDDLE											
	ENTERS BOTTOM	MOTTOM	→									
DATE: 5	5.5.83		ENGIA	ENGINEER IN CHARGE: THOMAS	HARGE	T	POH	43	} ≧	EUS: A	1327	DIVERS. AUSTLA PEIST

FLEET MOORING DATA SHEET

LAT. COORD. (N) =
$$21^{2}-22^{1}-31.8^{11}$$
 LONG. COORD. (W) = $157^{2}-57^{1}-34.3^{11}$

OF ANCHORS = -



MOORING AM13A SCHEMATIC DRAWING

INSPECTION RESULTS

CMN

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It is fiberglass coated and has two rubber fenders and a 2-inch pipe chafing rail. The buoy is in good condition.

Riser

Although the Fleet Mooring Data Sheet obtained from PWC Pearl Harbor lists the riser chain as being 2 3/4 inches in diameter, the actual wire diameter of the riser is 2 inches. The riser, which is comprised of Dilok chain, enters the bottom at 40 feet. All double link measurements were greater than 90 percent of original wire diameter.

Anchor

This mooring consists of only a buoy, riser, and anchor. The anchor was not visible and could not be inspected.

Recommendation

This mooring is in satisfactory condition for continued use as a class G mooring.

OORING N	V	-CLASS:	a		LOCATIC) : NC	25160	KHIAT	212	1,77	LOCATION: WEST LOCH LAT: 21 21.8 LONG: 157°59'34.3"	
WATER DEPTH:	:: 40	Ì	NCHOR	SIZE/TY		24K	CONC	BUOY	TYPE:	X 67	ANCHOR SIZE/TYPE: 1-34K# CONG BUOY TYPE: 12 \$ X6 HAWSEPIPE	
BOTTOM TYPE:	E: SAND	٥	TAND ON THE		CLAY	Ŏ	CORAL		☐ ROCK		(IN USE)	
Visibility_2	o	= depth	_		N IN	i inspect	NI = not inspected, inaccessible	ssible				
						CONDITION	LION					
COM	COMPONENTS	ž	NEW	SIS	SINGLE LINK %	ж %	DOUB	DOUBLE LINK %	% %	O	COMMENT	
	·			÷06	+08	-08	+06	₩	-08			-
BUOY	BUOY HARDWARE										RUBBER FENDER : 6000	
ETACI	DETACH LINK	7									FISERGLASS : GOOD	_
P.S. LINK	NK	7										1
O VISI	(NO VISIBLE WEAR)										RISER CHAIN IS 2" PER AS BUITS	4.5
										İ	UICE 22"ON 1982 DATA SHEET	1
	NEAR BUOY		2.		777		77		7	400	0/1 3/2, 35, 38, 15/1 13, 13, 13,	
RISER	MIDDLE		_	7	7		7		7	20,	D-L 3, 45, 45"/5-L 1%"13" 13	
	NEAR GRD RG		→		77		77	7		40	D-L 3/2, 38, 38	1
GROL	GROUND RING	7									ANCHOR BURIED	
_	UPPER END		NA									_
LEG	MIDDLE								-			
=	ENTERS BOTTOM					 						T -
-	UPPER END											7
LEG	MIDDLE											т —
-	ENTERS BOTTOM											T
	UPPER END											Т
LEG	MIDDLE											_
	ENTERS BOTTOM											1
_	UPPER END											$\overline{}$
LEG NO D	MIDDLE											
_	ENTERS BOTTOM		→					•			•	
DATE: S	28.2.5	ENGIN	ENGINEER IN CHARGE:	HARGE		THOMAS	Ŋ	à	ERS: 5	PEE	DIVERS: SPEER/TZUCANOW	1

FLEET MOORING DATA SHEET

MRG ID = CMN GENERAL LOC = West Loch DES CLASS = G

DATE ESTAB = 1943 DEPTH = 39.0 ft. (MW) BOTTOM = Mud

LAT. COORD. (N) = $21^{4}-21^{2}-26.6^{2}$ LONG. COORD. (W) = $157^{4}-59^{2}-34.3^{2}$

BUOY TYPE = Riser-chain wy haivsepipe SIZE = 12'\$ x 6' hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = 22/4"

SINKER = 1 WT. OF SINKER = $\frac{34,000 \pm 9}{24.4}$ PADEYE SIZE = $\frac{24.4}{4}$

OF ANCHORS = 0

ANCHOR 1 WT = ___ PADEYE SIZE = ___ ANCHOR 2 WT = ___ PADEYE SIZE = ___ ANCHOR 3 WT = ___ PADEYE SIZE = ____ PADEYE SIZE = ___ PADEYE SIZE = ___ PADEYE SIZE = ___ PADEYE SIZE = ____ PADE

USAGE DURING PAST YEAR = 365 deys

TYPE OF SHIPS MOORED = caisson

DATE OF LAST REPAIR/COST = 1977/52,750

DATE OF LAST OVERHAUL/COST = 5-70/ ?

DATE OF LAST UNDERWATER INSPECTION = 1979

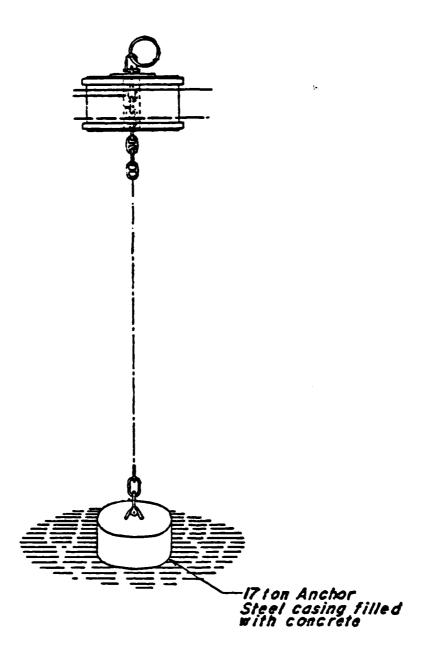
CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = 1988

NEXT SCHED. OVERHAUL = 1985

DATE SHEET COMPILED = 8-82/MS

* RISER CHAIN SIZE MEASURES 2" (5/83)



MOORING CMN SCHEMATIC DRAWING

INSPECTION RESULTS

CMM

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has two rubber fenders and a steel pipe chafing rail. The buoy is fiberglass coated and is in good condition. Top jewelry consists of an anchor joining link and a shackle.

Riser

The original wire size of the riser chain was measured to be 2 inches vice the 2 3/4 inches reported on the Fleet Mooring Data Sheet. This chain is badly worn, measuring as small as 1/2 inch (25 percent of original diameter) in some areas. The riser enters the bottom at a depth of 40 feet.

Anchor

This mooring consists of only a buoy, riser, and anchor. The anchor was not visible and could not be inspected.

Recommendation

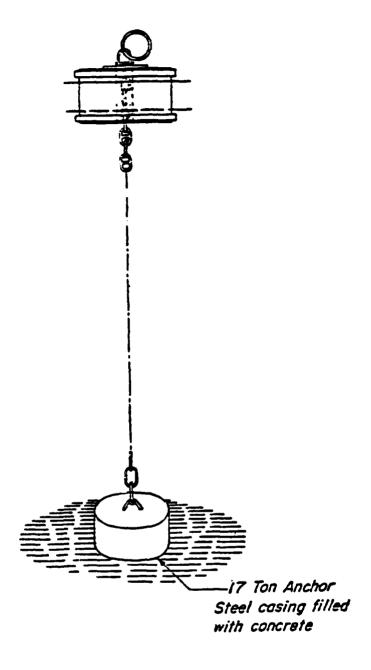
Due to the badly worn riser chain, this mooring is in unsatisfactory condition for continued fleet usage. Recommend tht the mooring be recovered and its component material overhauled/replaced.

MOORING	MOORING NO.: CMINI	_CLASS:	4		LOCAT	ON: NO	ESTLO		: 212	74.	LOCATION: WEST LOCH LAT: 2121 24.8 LONG: 157 59 33.2	
WATER DEPTH:	тн: 40	Ì	ANCHOR	SIZE/T	YPE:	24 亿	E CON	BUOY	TYPE: ₫	2,67	ANCHOR SIZE/TYPE: 1-34K# CONC BUOY TYPE: 120 X6 HANDEPIPE	
BOTTOM TYPE	'PE: SAND	٥		\	CLAY		CORAL		□ ROCK		(IN USE)	
Visibility	2, D	- depth	£		e N	t inspec	NI = not inspected, inaccessible	assible				
						CONDITION	TION					_
CON	COMPONENTS	ž	NEW	S	SINGLE LINK %	1K %	DOU	DOUBLE LINK %	% %	٥	COMMENT	
i				÷	\$ 08	-08	÷06	÷08	-08			-
BUOY	BUOY HARDWARE								ı		LINK MODIFIED - CROSSEAR	_
DOININ	DINING LINK	7									REMOVED.	_
SHACKLE	.LE	7					-				FIBERGLASS, RUB RAIL: 6000	_
DETRCH LINK	HUNK	1				-					RUBBER FRNDER: GOOD	_
(No Vis	NO VISIBLE WEAR)									*	* (RISERCHAIN 2" AS PER AS-BUILTS,	_
	NEAR BUOY	-1-	¥2"		1/2					9	TOP VICE 23 PER 1982 DATA SHEET.)	_
RISER	MIDDLE		_		7				7	1,21	ONE LINK WORN TO I" THICK	_
	NEAR GRD RG		>		3					-04		
GRO	GROUND RING	7	ಹ	RIB	Δ						(MEASUREMENTS ON OTHER LINKS	
	UPPER END		∀ 2								(3/4" TO 17/8")	_
LEG	MIDDLE		_									_
NO. A	ENTERS BOTTOM											_
CINITO	UPPER END											_
LEG	MIDDLE											_
	ENTERS BOTTOM											,
941000	UPPER END											,
LEG	MIDDLE											_
,	ENTERS BOTTOM											_
ONITOOS	UPPER END											_
LEG	MIDDLE											
3	ENTERS BOTTOM		→									
1	5-5-83		ENGINEED IN	Savina	17	THOMAS		8		190	CPFKO / Talle allu.	ŧ

FLEET MOORING DATA SHEET

LAT. COORD. (N) =
$$21^{6}-21^{6}-24.6^{8}$$
 LONG. COORD. (W) = $157^{6}-59^{6}-33.2^{8}$

CHAIN SIZE =
$$\left(2^{3}/4^{11}\right)$$



MOORING CMM SCHEMATIC DRAWING

INSPECTION RESULTS

CMS

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has two rubber fenders, a 2-inch pipe chafing rail, and it is fiberglass coated. The buoy is in good condition.

Riser

Section 18 and the section of the se

The riser chain is badly worn. Double link measurements of the chain in three locations were all less than 80 percent of the original diameter. One double link measurement was only 2 1/2 inches, about 45 percent of the measured original link diameter of 2 inches. The riser enters the bottom at a water depth of 40 feet.

Anchor

This mooring consists of only a buoy, riser, and anchor. The anchor was not visible and could not be inspected.

Recommendation

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of mooring CMS, the double link measurements of even the most badly worn chain links (2 1/2 inches) are almost 1 inch larger than the 1 1/2-inch double link measurement of the 3/4-inch-diameter chain required for a G class mooring. Therefore, the mooring should still be capable of withstanding G class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING N	MOORING NO : CMS		CLASS:_	ט		LOCA	TION:	KST.	LOCH LA	11:21%	7,23	LOCATION: WEST LOCH LAT: 21/21/22.9" LONG: 1570 59/33.1"	
WATER DEPTH:	TH: 4	40,	1	NCHOR	SIZE/T	ype: L	34K	# 400	Sc Buo	Y TYPE:	12'4 ×	ANCHOR SIZE/TYPE: 1-34K# CONC BUOY TYPE: 124 X 6 HAWSEPIPE	
BOTTOM TYPE		□ SAND		OJE Z	_	☐ CLAY	□ >	CORAL	<u>Ц</u>	□ ROCK		(HOT (II) 115 F)	
Visibility	7	٩	D = depth	_		2	oot inspa	NI * not inspected, inaccessible	cessible				
							CON	CONDITION					
COM	COMPONENTS		ž	NEW	S	SINGLE LINK %	INK %	00	DOUBLE LINK %	NK %	a	COMMENT	
					÷06	÷08	-68	÷06	÷08	98			
BUOY	BUOY HARDWARE											RUBBER FENDER: 6000	
SHACKLE	37 7		7									FIBERGLASS: GOOD	
GROUL	GROUND FING	\4	7									BUB RAIL , GOOD	
(No VISI	(NO VISIBLE WEAR	AR)											
												·	
	NEAR BUOY			7,1			7			7	407	PISER CHAIN IS 2" PER AS-	
RISER	MIDDLE			_			7	:		7	25	BUILTS VICE 13" PER 1982 DATA	
	NEAR GRD RG	98		->			7		 	7	46,	ONE LINK MEASURES 21/2" DL	
GRO	GROUND RING		7	AU					_			1	
	UPPER END			4									
LEG LEG MO A	MIDDLE					ļ 							,
¥0. A	ENTERS BOTTOM	TOM											,
OMITO	UPPER END												
LEG	MIDDLE												_
	ENTERS BOTTOM	MOT.											
OW TO GO	UPPER END												
LEG	MIDDLE												
	ENTERS BOTTOM	TOM					.,					-	
ONLOGS	UPPER END												
LEG	MIDDLE												_
	ENTERS BOTTOM	TOM		7									
DATE:	2-2-83		ENGINE	ENGINEER IN CHARGE:	HARGE		THOMAS	AS	ā	VERS:	Spe	DIVERS: SPEER TELICANOW	•

Topic of Control (Control of Control of Cont

MRG ID = CIAS GENERAL LOC = N'EST Loch DES CLASS = G

DATE ESTAB = 1940 DEPTH = 42.0 ft. (MEW) BOTTOM = Mud

LAT. COORD. (N) = $2!^{2}-2!^{2}-22.9$ LONG. COORD. (W) = $157^{2}-59^{2}-33.1$

BUOY TYPE = Riser-chain of hansepipe SIZE = 12/0 x 6/ni

FENDER = RUBBER FIBERGLASS COATING = Yes

CHAIN SIZE = £ 3/4"

SINKER = 1 WT. OF SINKER = 34,000 # PADEYE SIZE = 21/4"

OF ANCHORS = O____

ANCHOR 1 WT =

ANCHOR 2 WT =

ANCHOR 3 WT = -

ANCHOR 4 WT =

PADEYE SIZE =

PADEYE SIZE =

PADEYE SIZE =

PADEYE SIZE =

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = caisson

DATE OF LAST REPAIR/COST = 1977/\$2,750

DATE OF LAST OVERHAUL/COST = 5-70/?

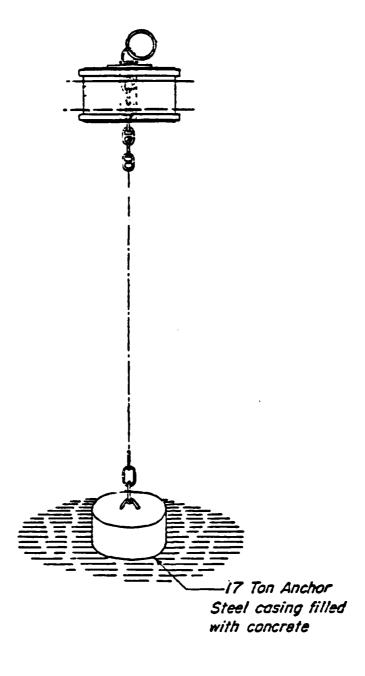
DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = 1968

NEXT SCHED. OVERHAUL = 1985

DATE SHEET COMPILED = 8-82/MS

* RISER CHAIN SIZE MEASURED 2" BY DIVERS (5/83)



MOORING CMS
SCHEMATIC DRAWING

D₁M

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has two wooden fenders and a wooden chafing rail, all of which are in good condition. Although the buoy top is in good condition, there is some rusting and pitting of the side plating. The buoy's top jewelry is in good condition. The buoy floats in 23 feet of water.

Riser

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The original size of the riser chain was 2 inches vice the 2 3/4 inches listed in the Fleet Mooring Data Sheet. Single link measurements of the riser were less than 80 percent of the original wire diameter in the areas near the mudline. The riser chain disappeared into the bottom at a water depth of 23 feet.

Anchor

This mooring consists of only a buoy, riser and concrete anchor. The anchor was not visible and could not be inspected.

Recommendations

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of mooring D1M, the single link measurements of even the most badly worn chain links (1 1/2 inches) are almost twice as large as the 3/4-inch diameter chain required for a G class mooring. Therefore, the mooring should still be capable of withstanding G class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING NO.: WATER DEPTH: _	0: 71 E		ASS: _	-CLASS: C.C.C.	ZE/T	LOCATI PE: [-6	ON: PA	כסאכ	CH LA	T:CL Z	7.47	SI CICL LOCATION: MIDLE LOCAL LAT: CL ZZ 19:4 LONG: 13 1 39 V.C. ANCHOR SIZE/TYPE: 1-60K# CONC. BUOY TYPE: 12'0 X6' HAWSEPIPE.
BOTTOM TYPE:		SAND				CLAY		CORAL		Пвоск	•	(NOTIN USE)
Visibility		D = depth	lepth			N N	t inspec	I = not inspected, inaccessible	essible			
					i		CONDITION	TION				
COM	COMPONENTS	Ž	<u>_</u>	NEW	SING	GLE LINK %	% XI	noa	DOUBLE LINK %	* %	۵	COMMENT
					8	\$	8	6	9 8	-98		
QUOY	QUOY HARDWARE											TOP OF BUOY, EUB RAIL, WOOD
SHACKLE	ZKLE.	7										FENDERS GOOD,
6ROU	GROUND RING	7	7									SOME RUST & PITTING ON SIDES
!		_										OF BUOY - NO FIBERGLASS.
												NO VISIBLE WEAR ON TOP HARDWARE
	NEAR BUOY		*	1,7		77,			77			
RISER	MIDDLE	l	-	_		77			•) =	
	NEAR GRD RG	/5		>			3		13			DL 37, 37, 34/56 16, 18, 1/2
GRO	GROUND RING	7										SINKER NOT VISIBLE
Qui Cas	UPPER END			NA								
LEG	MIDDLE											
NC. A	ENTERS BOTTOM	МО										
GROUND	UPPER END											
LEG	MIDDLE						1.					
	ENTERS BOTTOM	MO.										
Civilodo	UPPER END											•
LEG	MIDDLE											
	ENTERS BOTTOM	WO										
CINITORS	UPPER END	-	+									
LEG NO	MIDDLE	-	\dashv									
	ENTERS BOTTOM	WO		Ð								
DATE:	5.6.5	1	GINEE	ER-IN-CI	ENGINEER IN CHARGE:		THOMAS	A S	via –	/ERS: 🏿	757E	DIVERS: ELSASSER/SPEER. * VICE 23-SHOWN ON AS-BUILTS

Control of the Contro

MRG ID = D1M GENERAL LOC = Middle Lock (ISMF) DES CLASS = C(*)

DATE ESTAB = 1950 DEPTH = 34.0 ft./MLW) BOTTOM = Mud

LAT. COORD. (N) = $21 \cdot 22' - 19.2''$ LONG. COORD. (W) = $157^{\circ} - 59' - 00.6''$

BUOY TYPE = Riser-chain wy hawsepipe SIZE = 12/0 x 6 hi

FENDER = Wood

FIBERGLASS COATING = No

CHAIN SIZE =

SINKER = $\frac{1}{2}$ WT. OF SINKER = $\frac{60,000 \text{ #}}{4}$ PADEYE SIZE = $\frac{2}{4}$

OF ANCHORS =

ANCHOR 1 WT =

ANCHOR 2 WT = _____ ANCHOR 3 WT = ____

ANCHOR 4 WT = 7

PADEYE SIZE =

TYPE OF SHIPS MOORED = ?

USAGE DURING PAST YEAR = 0

DATE OF LAST REPAIR/COST = 1977/ 4.4,850

DATE OF LAST OVERHAUL/COST = 3-76/?

DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY = CHESDIV (UCT TWO)

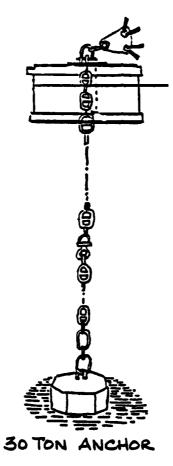
NEXT SCHED. REPAIR = 1985

NEXT SCHED. OVERHAUL = 1982 (++*)

DATE SHEET COMPILED = 4-83

- (*) Diwn-graded to class a ofter 1979 u/w Insp.
- (1x) Overhaul expected to be examplished by Centr. NG2471-82-C-2164 in 1982; However, DBS substituted vice this mooring in contract work.

INNA) MEASUREMENTS INDICATE THIS WAS PROBABLY 3 "CHAIN ORIGINALLY



MOORING D1M SCHEMATIC DRAWING

D2N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has two rubber fenders and a 2-inch pipe chafing rail. The buoy is fiberglass coated, and the hull appears to be in good condition. However, the steel plating on top of the buoy and the top hardware are badly rusted. The buoy's bottom is covered with thick marine growth.

Riser

Although double link measurements of the riser chain taken near the buoy and halfway down were all over 90 percent of original wire diameter, single link measurements taken near the mud line were as small as $1\ 1/4$ inches (45 percent of original diameter). The riser enters the bottom at a water depth of 25 feet.

Ground Ring

Buried

Ground Legs

Buried

Anchors/Sinkers

Not visible for inspection

Recommendations

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, the riser chain in this case is worn to $1\ 1/4$ inches which is the size chain requirement for a class F mooring. Recommend that this mooring be downgraded from a class D to a class F mooring.

LOCATION: MID. LOCH LAT: 21 22 23.9 LONG: 157 59 1.0"	YPE: 4-60K# CONC, BUOY TYPE: 12 4 X 6 HAWSE PIPE	(IN USE)			COMMENT	!	BUOY SHOWS 45° LIST	TOP \$ TOP HARDWARE : HEAUY	RUST. FENDERS, FIBERGLASS: OK	NO VISIBLE WEAR IN TOP HOWE.		23" 60/NO-60 CAUGE	DL 34" /SL 14" (CALIPERS)	REPORTED & REPEATED BY	1	DOUBTFUL)		ANCHORS & GROUND LEGS NOT	VISIBLE								CITTON DI ATT
22.23	2,47				۵			-			700	18,	,52														SUTT
1:21%	TYPE: J	ROCK			*	-98							<i>\</i>														/ERS:
VI FO	E BUOY		sessible		DOUBLE LINK %	\$0€			•																		<u>ة</u> ا
व्य वा	CONC	CORAL	NI = not inspected, inaccessible	TION	00	÷06					///	VVV															35
NON: M	60K#		ot inspec	CONDITION	NK %	8							11		1												ENGINEER IN CHARGE: THOMAS
LOCAT	YPE: 4	☐ CLAY	1 2		SINGLE LINK %	- + 08				٠																	日
٥	SIZE/T)				lis	\$																					HARGE
A	ANCHOR SIZE/T	TAND	_		NEW						23		→			·										ĺ	EER-IN-(
-CLASS: A	4		D = depth		ž			7	7					7	7	7	7	7	7	7	7	7	7	7	7	7	ENGIN
NZQ	25'	□ SAND	•		JENTS		RDWARE	LE			NEAR BUOY	MIDDLE	NEAR GRD RG) RING	UPPER END	MIDDLE	ENTERS BOTTOM	UPPER END	MIDDLE .	ENTERS BOTTOM	UPPER END	MIDDLE	ENTERS BOTTOM	UPPER END	MIDDLE	ENTERS BOTTOM	5.8.6.5
MOORING NO.: _	NATER DEPTH:	SOTTOM TYPE:	Visibility W		COMPONENTS		BUOY HARDWARE	SHACKLE	SPIDER		NE.	RISER	NE	GROUND RING	_	LEG MIC	-		LEG NO B	\dashv		LEG MID			LEG NO D	_	DATE: S.

MRG ID = D2N GENERAL LOC = Middle Loch (FSMF) DES CLASS = A (*)

DATE ESTAB = 1943 DEPTH = 33.0 ft. MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\dagger}-23.9^{\circ}$ LONG. COORD. (W) = $157^{\circ}-59^{\dagger}-01.0^{\circ}$

BUOY TYPE = Riser-chain wy howsepipe SIZE = 12 & x 6 hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4."

SINKER = 1 WT. OF SINKER = 40,000 1 PADEYE SIZE = 2/4 6

OF ANCHORS = 4

ANCHOR 1 WT = 60,000 #

ANCHOR 2 WT = (p_0) ANCHOR 3 WT = (p_0)

ANCHOR 4 WT = -

PADEYE SIZE = 7

PADEYE SIZE =

PADEYE SIZE = T

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = YO/YOV/OTEC

DATE OF LAST REPAIR/COST = $1976/\beta 2,000$

DATE OF LAST OVERHAUL/COST = ?/?

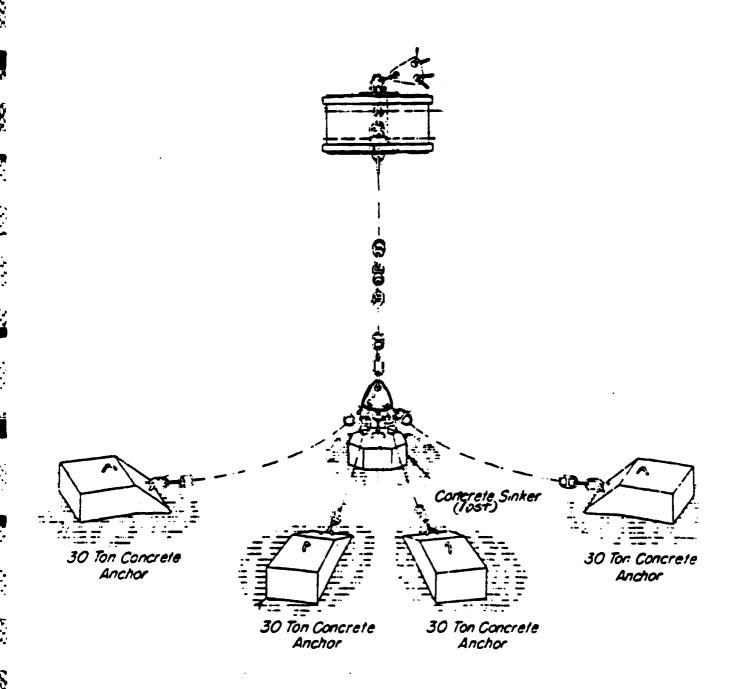
DATE OF LAST UNDERWATER INSPECTION = 1979 CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = (967

NEXT SCHED. OVERHAUL = 1984

DATE SHEET COMPILED = 8-82/MS

(r) Louin-graded to class D after 1979 U/W Insp.



MOORING D2N SCHEMATIC DRAWING

D2S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with hawsepipe. It has two rubber fenders and a 2-inch pipe chafing rail. The buoy is fiberglass coated and its hull is in good condition. The topside hardware components are heavily rusted but measure greater than 90 percent of their original wire diameter.

Riser

The original wire diameter of the riser chain was measured to be 4 inches vice the 2 3/4 inches reported on the Fleet Mooring Data Sheet. The chain was measured to be greater than 90 percent of its original wire diameter. The riser enters the bottom at a depth of 20 feet.

Ground Ring

Buried

Ground Legs

Buried

Anchors/Sinkers

Buried

Recommendations

This mooring is in satisfactory condition for continued use as a class ${\sf G}$ mooring.

ANCHOR SIZE/TYPE: 4-60K#CONC, BUOY TYPE: 12, 0 X C HAWSEPIPE	(ash (ii)	,		D		FIBERGLASS, DECK PLATE,	RUB RAIL, RUBBER FENDERS : OK		TOP HARDWARE: HEAVY RUST	BUT NO VISIBLE WEAR.	10P DL 72, 78 72/54 42, 42, 44	DL 7/2, 1/8, 13, /51.48, 48, 1	DL 72, 78, 71/1/51.48, 42,	ANCHORS	NOT VISIBLE		SINGLE - AND DOUBLE - LINK	MEASUREMENTS MADE WITH	CALIPERS BY DIVERS)							
JOY TYPE:	ROCK	a		LINK &	-08 +	-																				
CONC. BI	CORAL	NI = not inspected, inaccessible	NOI	DOUBLE LINK %	+08 +08						77	77	77										_			
-60K#	å	ot inspecte	CONDITION	NK %	98						1,	,	3					·								
YPE:4	CLAY	N Z		SINGLE LINK %	\$																			·		
OR SIZE/I	vo on				\$						= . 7,	3	3													
- ANCH	14 CD	depth	_	NEW			\	7	\		* 4		^	\			\				\					_
	SAND	0	_	Z —			7	7	7	7			9	7	7	٦	7 MO.	7	7	7 MO.	7	7) MO.	7	1	7 MO.
TH: 20		m		COMPONENTS		BUOY HARDWARE	KLE	DETACH. LINK	SPIDER W. 4	LINKS	NEAR BUOY	MIDDLE	NEAR GRD RG	GROUND RING	UPPER END	MIDDLE	ENTERS BOTTOM	UPPER END	MIDDLE	ENTERS BOTTOM	UPPER END	MIDDLE	ENTERS BOTTOM	UPPER END	MIDDLE	ENTERS BOTTOM
WATER DEPTH:	BOTTOM TYPE:	Visibility		COMI		BUOY	SHACKLE	ETAC	PIDE	P.S. L		RISER		GRO		LEG	$\overline{}$		LEG			LEG	_	_	LEG	

DATE ESTAB = 1943 DEPTH = 25.0 ft./MLW) BOTTOM = Mud

LAT. COORD. (N) =
$$21-22-20.8$$

LAT. COORD. (N) = 21-22-20.8" LONG. COORD. (W) = 157-59-05.2"

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE =
$$\left(2\frac{3}{4}\right)^{-1}$$

PADEYE SIZE = 21/4 4

PADEYE SIZE = PADEYE SIZE =

PADEYE SIZE =

USAGE DURING PAST YEAR = _365 days

TYPE OF SHIPS MOORED = YO/YON/OTEC

DATE OF LAST REPAIR/COST = 1976/\$2,000

DATE OF LAST OVERHAUL/COST = ?/?

DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY = CHESDIV (UCT TWO)

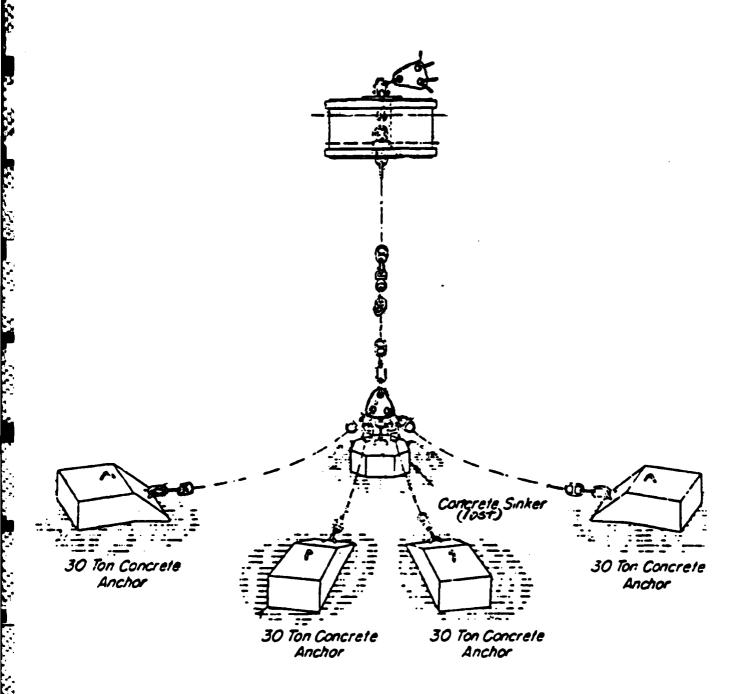
NEXT SCHED. REPAIR = 1987

NEXT SCHED. OVERHAUL = 1984

DATE SHEET COMPILED = 8-82/MS

(*) town-graded to class & after 1979 U/W Inop.

RISER CHAIN MEASURED 4" BY DIVERS (5/83)



MOORING D2S
SCHEMATIC DRAWING

D3N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has two rubber fenders and a galvanized pipe chafing rail. The buoy is fiberglass coated and the hull appears to be in good condition. However, the steel top plate is moderately rusted. The topside hardware is in good condition.

Riser

The original diameter of the riser chain is $2\,3/4$ inches and double link measurements were between 80 and 90 percent of this wire size. The riser enters the bottom at a water depth of 25 feet.

Ground Ring

Buried

Ground Legs

Buried

Anchors/Sinker

Buried

Recommendations

A measurement between 80 and 90 percent of any mooring component is normally cause for downgrading the mooring to the next lower classification. However, in the case of Mooring D3N, the double link measurements of even the most badly worn chain links are more than 3 inches larger than the 1 1/2-inch double link measurement of the 3/4-inch diameter chain required for a G class mooring. Therefore, the mooring should be capable of withstanding G class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING NO.:	DSN	_CLASS	CLASS: A	19	LOCATIC	N: MIC	200	HLAT	27.2	1,11	LOCATION: MID LOCH LAT: 21'22'27 LONG: 157059 '3.6"
WATER DEPTH:	,52	Ì	ANCHOR	SIZE/TY	PE:4-	20K#	CONK	BUOY	ryPE: <u>L</u>	2,47	ANCHOR SIZE/TYPE: 4-60K# CONK BUOY TYPE: 12' OX 6' HAWSEPIPE
BOTTOM TYPE:	PE: SAND		Z MUD	_	CLAY		CORAL		ROCK		(IN USE)
Visibility	, A	D = depth	£		NI = not inspected, inaccessible	r inspecte	d, inacce	sible			
						CONDITION	NO				
X 00	COMPONENTS	ž	NEW	SIN	SINGLE LINK %	*	BOOR	DOUBLE LINK %	*	۵	COMMENT
				*	+ 08	-08	. 0 6	÷08	-08		
BUOY	BUOY HARDWARE										FIBERGLASS:GOOD
SHACKLE	KLF	7									FENDERS & RUB RAIL: GOOD
SHACKLE	五つス	7							_		DECK PLATE: MODERATE RUST
SPIDI	SPIDER W.4	7									
P.5.	P.S. LINKS	/	, i								NO VISIBLE WEAR ON TOP HARDWARE
	NEAR BUOY		122	77		7	77			dol	
RISER	MIDDLE			77		3	7,			20,	27 60/NO.60 GAUGE
	NEAR GRD RG		^		727		•	177		, 52	
GRO	GROUND RING		4								ANCHORS & GROUND LEGS NOT
041000	UPPER END	7									VISIBLE
LEG	MIDDLE	7									
¥ .	ENTERS BOTTOM	7									
OMINO	UPPER END	7									
LEG	MIDDLE	7									
	ENTERS BOTTOM	7									
	UPPER END	7									
LEG	MIDDLE	7									
3	ENTERS BOTTOM	7									
Otto	UPPER END	7									
LEG	MIDDLE	1									
	ENTERS BOTTOM	7									
DATE	5.9.83	ENGIN	ENGINEER IN CHARGE: THOMAS	HARGE	月	2МА	W	Ma 1	ERS:	MIT	DIVERS: SUTTON PLATT

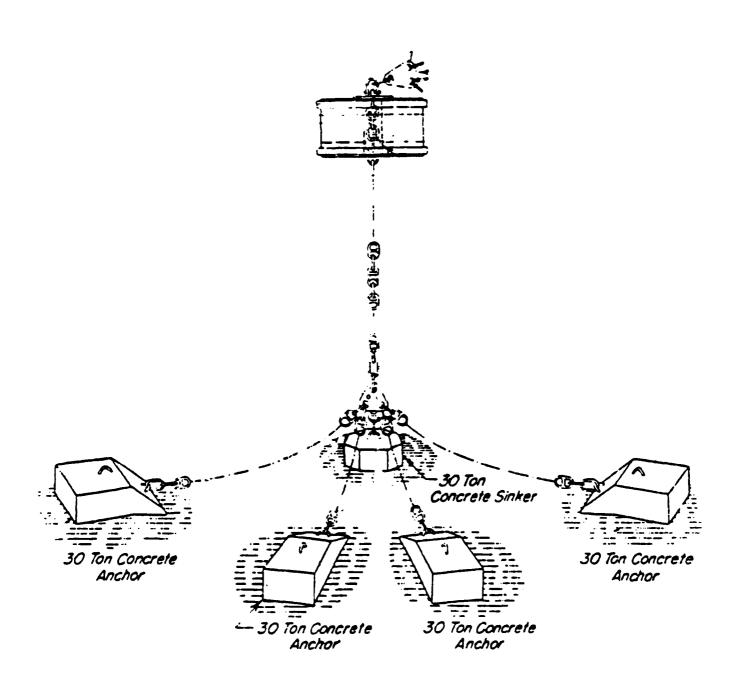
<u>ा</u> }ऽऽऽ

LAT. COORD. (N) =
$$21-22^{i}-27.0^{*}$$

LAT. COORD. (N) =
$$21-22-27.0^{\circ}$$
 LONG. COORD. (W) = $157-59-03.6^{\circ}$

SINKER = 1 WT. OF SINKER =
$$\frac{60,000 \text{ th}}{2000 \text{ th}}$$
 PADEYE SIZE = $\frac{2/a^{2}}{4}$

ANCHOR 2 WT =
$$(D_2)$$



MOORING D3N
SCHEMATIC DRAWING

D4N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has two rubber fenders and a pipe chafing rail. The buoy is fiberglass coated and is in good condition. The top jewelry showed no visible wear.

Riser

The wire diameter of the riser chain was greater than 90 percent except near the mud line where it was measured to be between 80 and 90 percent. The riser enters the bottom at a water depth of 30 feet.

Ground Ring

Buried

Ground Legs

Buried

Anchors/Sinker

Buried

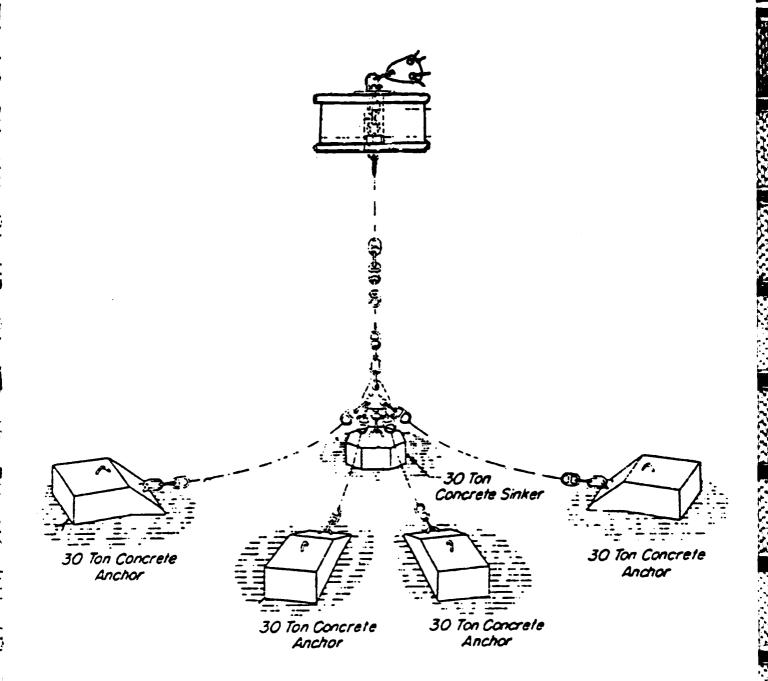
Recommendation

Measurements between 80 and 90 percent of original wire diameter are normally cause for a mooring to be downgraded one classification. However, in the case of Mooring D4N, the double link measurements of even the most badly worn chain links are larger than the $1\ 1/2$ -inch double link measurement of the 3/4-inch diameter chain required for a G class mooring. Therefore, the mooring should still be capable of withstanding G class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOOHING NO.:	D4N	CLASS	CLASS: A	2	007	ATION	MIC	277	HLAT	212	2,30	LOCATION: MID. LOCH LAT: 21 22 30.1 LONG: 157 59 6.2"
WATER DEPTH:	TH: 30,	Ì	ANCHOR SIZI	SIZE/	TYPE:	79-5	X#	CONK	BUOY	TYPE:	2.0	ENTYPE: 4-60K#CONC.BUOY TYPE: 12 4 X 6 HAWSEPIPE (IN USE)
BOTTOM TYPE	PE: SAND	Q	EZ MUD		CLAY	¥	CORAL	BAL		□ ROCK	Visibi	Visibility 2 D = depth NI = not inspected, inaccessib
						ວ	CONDITION	NO				
CON	COMPONENTS	ž	NEW		SINGLE LINK %	LINK !	ور	DOUB	DOUBLE LINK %	*	D	COMMENT
				• 06	+ 80+		-08	+06	\$0€	90		
BUOY	BUOY HARDWARE											FIBERGLASS:GOOD
SHACKLE	KLE	7								-		DECK PLATE, RUB, RAIL,
SHACKLE	KLF	7										RUBBER FENDERS OK
SPID	SPIDER W.4	7										
P.S.L	P.S.LINKS	7										NO VISIBLE WEAR ON TOP HARDWARE
	NEAR BUOY		23"		Ζ,		7.	77			100	
RISER	MIDDLE		_	37	ζ,		7	75			15,	23" 40/NO-40 GAUGE
	NEAR GRD RG		>	7	7	\	7	3			301	
-6AR	-GROUND BING	*	24									ANCHORS & GROUND LEGS
000	UPPER END	7	•							-		NOT VISIBLE.
LEG	MIDDLE	7			· -							
	ENTERS BOTTOM	7					-					
Common	UPPER END	7					_					
LEG NO R	MIDDL E	7					-	-				
	ENTERS BOTTOM	7					<u> </u> 					
man, 05	UPPER END	7				_	_	_				
LEG LEG NO C	MIDDLE	7				_		_				
3	ENTERS BOTTOM	7					_	_				
Commo	UPPER END	7										
LEG NO D	MIDDI E	7										
	ENTERS BOTTOM	7										
DAIL	5.9.83 ENGINEER IN CHANGE: THOMAS	- ENGIN	HER IN C	HAH	GE:	140	VW.	N	Ald 1	ERS:	L5A	DIVERS. ELSASSER/SPEER * EYE ON CLUMP PER AS-BUILTS.

LAT. COORD. (N) =
$$\frac{21^{\circ}-22^{\prime}-30.1^{\circ}}{21^{\circ}-30^{\circ}-30^{\circ}}$$
 LONG. COORD. (W) = $\frac{157^{\circ}-59^{\prime}-06.2^{\circ}}{157^{\circ}-30^{\circ}-30^{\circ}-30^{\circ}}$

ANCHOR 1 WT =
$$60,0004$$
 PADEYE SIZE = $\frac{2/4}{4}$ ANCHOR 2 WT = $\frac{(F_0)}{4}$ PADEYE SIZE = $\frac{(F_0)}{4}$ PADEYE SIZE = $\frac{(F_0)}{4}$ PADEYE SIZE = $\frac{(F_0)}{4}$ ANCHOR 4 WT = $\frac{(F_0)}{4}$ PADEYE SIZE = $\frac{(F_0)}{4}$



MOORING D4N SCHEMATIC DRAWING

D4S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has two rubber fenders and a 2-inch pipe chafing rail. The buoy is fiberglass coated but its top steel plate is badly rusted. The chafing rail is moderately rusted, and the top jewelry is in good condition.

Riser

The riser chain was originally 2 3/4-inch wire diameter. Double link measurements of the riser chain near the mud line were all less than 80 percent of the original wire diameter. The riser entered the bottom at 20 feet of water depth.

Ground Ring

Buried

Ground Legs

About 5 feet of one ground leg was visible but the remainder was buried.

Anchors/Sinker

Buried

Recommendation

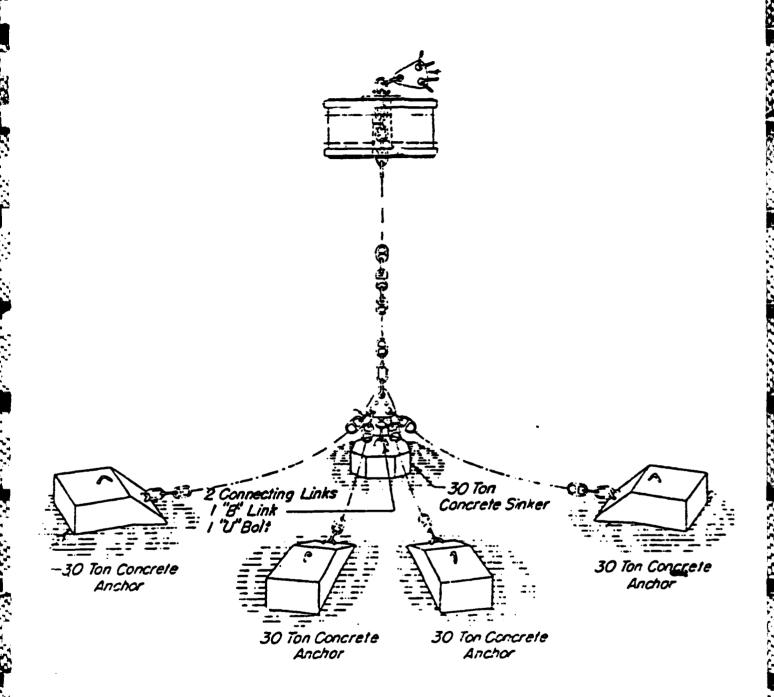
は、これのである。これが、1人のでは、1人の

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of mooring D4S, the double link measurements of even the most badly worn chain links are larger than the $1\ 1/2$ -inch double link measurement of the 3/4-inch diameter chain required for a G class mooring. Therefore, the mooring should still be capable of withstanding G class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING	MODRING NO. D4.5	- {	CLASS: A	7	ט	_LOCA1	ION: N	ין יעוו	V1∏7	1:21%	12,23	LOCATION: MID. LOCHLAT: 2122,21.1 LONG: 157 59 10.4
WATER DEPTH:	ти: 20	_	4	NCHOR	SIZE/T`	YPE:4	60Ks	FCON	C. Buoy	TYPE:	2.4	ANCHOR SIZE/TYPE: 4-60K# CONC. BUOY TYPE: 12 \$ X 6 HAWSEPIPE (IN 115E)
BOTTOM TYPE		SAND				CLAY		CORAL		Пвоск	Visib	Visibility 2 D = depth NI = not inspected, inaccessible
							COND	CONDITION				
00	COMPONENTS		ž	NEW	S	SINGLE LINK %	NK %	100 DO	DOUBLE LINK %	* X	a	COMMENT
					98	108	-08	98	90	98		
BUO	BUOY HARDWARE											FIRERGLASS & RUBBER FENDERS OF
SHACKLE	KLE		7									DECK PLATE SEVERELY RUSTED
SHACKLE	ZIE ZIN		7									RUB EAIL MODERATE ZUST
SPIDER	=R		7									
4 DE	4 DETACH. LINKS	NKS	7							•		NO VISIBLE WEAR ON TOP HARDWARE
	NEAR BUOY			27	1/2			77			TOP	
RISER	MIDDLE			_	73			77			2	23 Co/NO-60 GNUGE
	NEAR GRD RG	ЯG		>						77	20'	01 48 38 32 /51 18 17 13
E	GROUND RING		*	24	1/7							
CBOTTE	UPPER END			23/4	7							ONE LEG VISIBLE FOR ABT. S'
LEG NO A	MIDDLE		7				i					OTHER LEGS & ANCHORS BURIED
	ENTERS BOTTOM	TOM	7									
ONTORS	LIPPER END		7									
1.66	MIDDLE		7									
	ENTERS BOTTOM	ITOM	7									
000	UPPER END		7									
LEG NO C	MIDDLE		7									
	ENTERS BOTTOM	TOM	7									
000	UPPER END		7									
1 EG	MIDDLE		7									
	ENTERS BOTTOM	TOM	2									
DATE:	5.9.83 ENGINEER IN CHARGE: THOMAS	M	ENGINE	ER IN C	HARGE	井	ZZ	75	l d	/ERS: E	£2.5A	DIVERS: ELSASSER/SPEER *EYE ON CLUMP

LAT. COORD. (N) =
$$\frac{21^{\circ}-22^{\prime}-27.1^{\circ\prime\prime}}{27.1^{\circ\prime\prime}}$$
 LONG. COORD. (W) = $\frac{157^{\circ}-59^{\prime}-10.4^{\circ\prime\prime}}{10.4^{\circ\prime\prime}}$

OF ANCHORS =
$$\frac{4}{}$$



MOORING D4S

SCHEMATIC DRAWING

D5N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The buoy is floating on its side (90° to the vertical) which could indicate a hull rupture. A section of the fiberglass near the bottom is broken, and both fenders have pulled loose from the buoy's hull. The bottom of the buoy is covered with a heavy marine growth. The top jewelry consists of a detachable link and two pear links.

Riser

The riser consists of 2 3/4-inch cast chain, all of which measured greater than 90 percent of its original diameter. The riser enters the bottom about 25 feet below the surface of the water.

Anchor

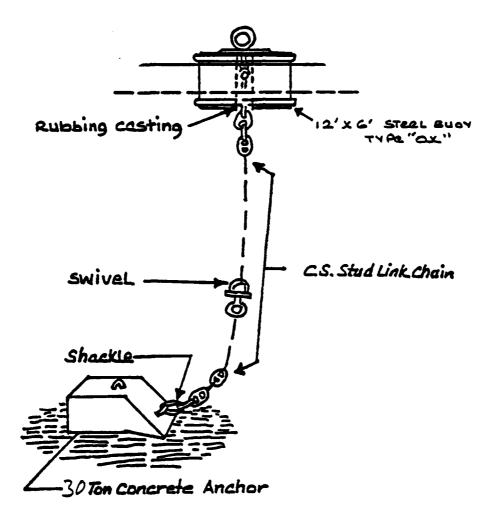
This mooring consists of only a buoy, a riser, and an anchor. The lower portion of the riser and the anchor were buried and could not be inspected.

Recommendation

The buoy should be recovered, and the cause of its list (condition of its watertight integrity) investigated. The loose fenders and broken fiberglass should be repaired or replaced as required. Use of this mooring should be restricted until buoy repairs are accomplished.

MOORING NO.: _	NSO :0	CLASS	CLASS: DE	,,	- LOCA	TION:EX	חימו	LOCATION: MID. LOCH LAT:	ï	3	TONG:	
WATER DEPTH:	TIE 25		ANCHOR	SIZE/T	YPE: L	-60K	# CON	C BUO	TYPE:	4,21	ANCHOR SIZE/TYPE: 1-60K# CONC. BUOY TYPE: 12.4 X 6' HAVISE/IPE (NOT IN USE)	(E)
BOTTOM TYPE:	PE: SAND	Q	onw.和		CLAY		CORAL		☐ ROCK	Visib	Visibility 4" D = depth NI = not inspected, inaccessible	/ accessible
						CONI	CONDITION					
COM	COMPONENTS	ž	NEW	S	SINGLE LINK %	INK %	00	DOUBLE LINK %	* *	٥	COMMENT	
				\$	ĝ	ģ	\$	8	-08			
BUOY	BUOY HARDWARE										BUDY HAS SO LIST	
DETAG	DETACH LIDK	7									FIBERGIASS BROVEN AT BOTTEM	8
2 1.5.	2 P.S. LINKS	7				<u> </u>					RUBBER FENDERS PULLED LOOSE	
SUBMERGED)	(CED)											
	NEAR BUOY	 	242	777			3			707		
RISER	MIDDLE			7 7			77			R	23" GO/NO-G- GAUGE	
	NEAR GRD RG		→	72	_		77			52		
CIIO	GROUND RING-	7	24.	ļ							AUCHOR BURIED	
9.00	UPPER END		N/A									
LEG LEG NO A	MIDDLE		_								BUDY DISPLACED DURING	
C	ENTERS BOTTOM	٧									HURRICANE [WA].)	
	LIPPER END											
166	MIDDLE											
	ENTERS BOTTOM	v										
	UPPER END											
1EG NO C	MIDDLE											
	ENTERS BOTTOM	•										
	UPPER END											
166	MIDDLE											
_	ENTERS BOTTOM		A									
DAIL	5.9.83 ENGINLER IN CHARGE: THOMAS	ENGIN	ILER IN C	HARG	1	HOM	AS	á	/ERS: E	1.5A	DIVERS: KLSASSER SPEER * EVE ON AUCHO	UCH!
)	PER AS-BUILTS	STI

LAT. COORD. (N) =
$$21^{\circ}.22^{\circ}-33.3^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-59^{\circ}-08.6^{\circ}$



MOORING D5N

SCHEMATIC DRAWING

INSPECTION REPORT

D5M

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It is fiberglass coated, has two rubber fenders and a galvanized pipe chafing rail. The overall condition of the buoy is good. Top jewelry consists of a shackle, spider plate, and four pear links.

Pier

Double link measurements of the 2 3/4-inch riser chain revealed that in many instances the chain is worn to less than 80 percent of the original wire diameter. The riser enters the bottom about 20 feet below the surface of the water.

Anchor

The mooring consists of only a buoy, a riser, and a concrete anchor. The anchor was not visible and could not be inspected.

Recommendation

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of Mooring D5M, the double link measurements of even the most badly worn chain are larger than the $1\ 1/2$ -inch double link measurement of the 3/4-inch diameter chain required for a G class mooring. Therefore, the mooring should still be capable of withstanding G class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

DISPLACED

MOORING NO.:		D5M	CLASS:	V	D	LOCAT	NON: A	LOCATION: MID. LOCH LAT:	CHTEN		5	LONG:
WATER DEPTH:	PTH:	,02		NCHOR	SIZE/T)	رو: او:	60K	601/6	E BUOY	TYPE:]	4,2	ANCHOR SIZE/TYPE: 1-60K# COLK, BUOY TYPE: 12' & X 6' HAWSEPIPE (NOT IN) USE)
BOTTOM TYPE	YPE:	SAND		T WILD		CLAY		CORAL		Пвоск	Visibility –	4' D = depth NI
				٠			COND	CONDITION				
703	COMPONENTS	ITS	Z	NEW	S	SINGLE LINK &	NX X	noa	DOUBLE LINK %	* *	a	COMMENT
					å	8	-08	9 06	98	98		
BUO	BUOY HARDWARE	WAĤE										FIBERCLASS / DECK PLATE /
ZHA	SHACKLE	Щ	7									RUB RAILS/FENDERS: COOD
SPIDER	Ř R	ż	7									
4 6	7.7	4 P.S. LINKS	7									
Novis	IBLE	NO VISIBLE WEAR		1								
	NEAR BUOY	BUOY		24		777			7	7	700	
RISER	MIDDLE	LE		_		177			37		0	27 GO/NO-GO GAUGE
	NEAR	NEAR GRD RG		>	77					177	20	
¥9.	CHOUND HING	#¥6	*	27.								ANCHOR BURIED
	UPPER END	END		N N								
LEG LEG NO	MIDDLE	Į.		_								
	_	ENTERS BOTTOM										MOORING DISPLACED BY
CHOINE	UPPER END	END										_
LEG LEG	MIDDLE	j.										1
		ENTERS BOTTOM								_		
	UPPEH END	END										
LEG PEG PEG PEG PEG PEG PEG PEG PEG PEG P	MIDDLE	Ŀ										
	LNIER	LNIERS BOTTOM										
	UPPER END	END										
LEG PO D	MIDDLE	E										
	LNIE	UNIERS BOTTOM		A								
DAIL	8.9	5.6.83	ENGIN	ENGINETH IN CHANGE: THOMAS	HARGE	#	WO	7	o l	ERS:	15.43	DIVERS: ELSASSER SPEER * EYE ON ANCHOR
												大名になったりに

MRG ID = DBM GENERAL LOC = Middle Loch (ISMF)

DES CLASS = C (+)

DATE ESTAB = 1950 DEPTH = 24.0 ft.//ML.X) BOTTOM = Mud

LAT. COORD. (N) =
$$2l^{\circ}-22^{\prime}-3l.8^{\circ}$$

LAT. COORD. (N) = $21^{\circ}-22^{\prime}-31.8^{\circ}$ LONG. COORD. (W) = $157^{\circ}-59^{\prime}-10.9^{\circ}$

FENDER = Rubber FIBERGLASS COATING = Yes

SINKER = _ WT. OF SINKER = 60,000 # PADEYE SIZE = 21/4- D

ANCHOR 2 WT = 1

ANCHOR 3 WT = 7 ANCHOR 4 WT = - PADEYE SIZE =

PADEYE SIZE =

PADEYE SIZE = PADEYE SIZE =

USAGE DURING PAST YEAR = -

TYPE OF SHIPS MOORED = ?/? / OTEC

DATE OF LAST REPAIR/COST = -1976/52,000

DATE OF LAST OVERHAUL/COST = ?/?

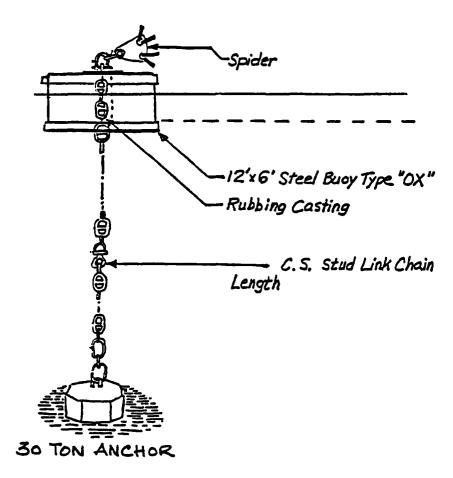
DATE OF LAST UNDERWATER INSPECTION = 1979
CONDUCTED BY = CHESDIV (UCT Two)

NEXT SCHED. REPAIR = 1986

NEXT SCHED. OVERHAUL = 1933

DATE SHEET COMPILED = 8-37-/45

(+) Down-graded to closs & after 1979 U/W Inso.



MOORING D5M

SCHEMATIC DRAWING

INSPECTION REPORT

D5S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated, has two rubber fenders and a 2-inch pipe chafing rail. The overall condition of the buoy and its top jewelry is good.

Riser

Although the upper portion of the riser chain measured greater than 90 percent of its original wire, one double link measurement near the center of the riser was less than 80 percent. The riser enters the bottom at a depth of $20 \, \text{feet}$.

Anchor

The mooring consists of only a buoy, a riser chain, and a concrete anchor. The anchor was not visible and could not be inspected.

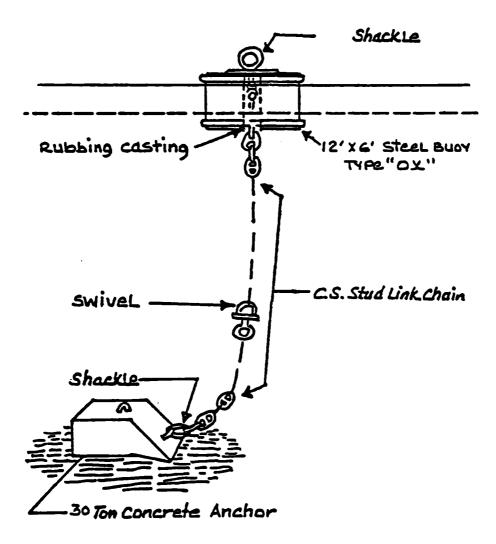
Recommendation

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of mooring D5S, the double link measurements of even the most badly worn chain are larger than the 1 1/2-inch double link measurement of the 3/4-inch diameter chain required for a G class mooring. Therefore, the mooring should still be capable of withstanding G class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOOHING NO.:	DSS 10:	_CLASS:_	Δ	19	701	ATION:	MIP	LOCATION: MIP. LOCHILAT:	<u>H</u> LAT:		$\frac{1}{2}$	
WATER DEPTIL:	m: 20'	Ì	ANCHOR	SIZE/I	rype:L	90 K	#60	NC. B	UOY T	YPE: L	2,47	ANCHOR SIZE/TYPE: LOOK # CONC. BUOY TYPE: 124 X 6' HAWSEPAPE (NOT IN USE)
BOTTOM TYPE:	PE: DSAND	g	DAMOD A		CLAY .		CORAL	IAL	□ ROCK	ОСК	Visibil	Visibility D = depth NI = not inspected, inaccessible
						00	CONDITION	z				
WOO .	COMPONENTS	ž	NEW	S	INGLE	SINGLE LINK %		DOUBLE LINK %	E LINK	*	0	COMMENT
	,			1 06	90	98		₩ +06	90	-08		
BUOY	BUOY HARDWARE				_							FIBERCLASS
DETA	DETACH. LINK	7										RUBBER FENDERS & GOOD
GROU	GROUND RING	7										ROB RAIL
(NO VISI	(NO VISIBLE WEAR,											
	NEAR BUOY		23/4	1/2	. \		777	۲,		. •	707	
RISER	MIDDLE		_		1/3		7	_	7	7	10	23. 60/NO-60 CAUCE
	NEAR GRD RG		->									1
OH9 ²	GHOLIND BIMG	*	24.7									ANCHOR BURIETS
	UPPER END		_							_		
CHOOND 1FG	MIDDLE		_									
¥	ENTERS BOTTOM											(MOORING DISPLACED BY
OWINGES	UPPER END											HURRICANE "IMA")
LEG NO B	MIDDLE											Į.
	ENTERS BOTTOM											
	LIPPER END							-	-			
LEG NO C	MIDDLE											
	ENTERS BOTTOM					<u>. </u>	:					
Oran On S	LIPPER END											
166	MIDDI.E				_	-						
	ENTERS BOTTOM		1									
DAIL	5.9.83 ENGINEER IN CHARGE: THOMAS	_ ENGIN	EER IN C	HARG	الله النيا	HEC	nA S		DIVE	RS:	15A	DIVERS. ELSASSER SPEER * EVE ON ANCHOR

PER AS BUILTS

LAT. COORD. (N) =
$$21^{\circ}-22^{\prime}-30.3^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-59^{\prime}-13.0^{\circ}$



MOORING D5S SCHEMATIC DRAWING

INSPECTION REPORT

D6M/D6S

Buoy

The identity of this mooring is questionable. The buoy is not numbered, and as it is located between the planned positions of D6M and D6S, this could be either D6M or D6S. The buoy is a 12-foot-diameter, 6-foot-high drumtype buoy with a hawsepipe. It is fiberglass coated and has two rubber fenders, although about 50 percent of the upper fender is missing. The top plate and the pipe chafing rail are in good condition.

Riser

The riser chain was measured to be greater than 90 percent of its original 2 3/4-inch diameter. The riser enters the bottom at a water depth of 22 feet.

Anchor

This mooring consists of only a buoy, a riser, and a concrete anchor. The anchor was not visible and could not be inspected.

Recommendation

This mooring is in satisfactory condition for continued use as a class ${\sf D}$ mooring.

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राज्य कार्या कार्याच्या प्राप्तिको अस्ति अस्ति अस्ति

DISPLACED LONG:	YPE: 1-60K# COLK; BUOY TYPE: 12'4 X6' HAWSELYIPE (NOT IN USE)	Visibility 4' D = depth NI = not inspected, inaccessible		D COMMENT		DECK PLATE. >	BUBISAIL SOK	HALF OF RUBBER FEUDER	MISSIDG.		Jak	11 23" CO/NO. GO GAUGE	22	ANCHOR NOT VISIBLE	* A PROBABLY DGM, BUT	MACKINGS NOT VISIBLE.)		MOOIZING WAS DISPLACED BY	HURRICANE "IWA".								DIVERS. ELSASSER/SPEER ** EVE ON ANTHOR
	rype: 12	□ ROCK		*	8						1		17														RS: E L
CHLAT	.BUOY 1		 	DOUBLE LINK %	÷06																						DING
LOCATION: MID. LACHLAT:	t colk	CORAL	TION	DOO	ĝ						7 _Z	77	1/2		i												AS
FION: K	60K		CONDITION	INK %	98							·															THOMAS
10CA	YPE: L	CLAY		INGLE LINK %	98																						نند
U	ZE/T			<u>s</u>	8						77		77	• •													CHARG
CLASS. D/C	ANCHOR SIZE/T	TAND		NEW							23.		^	12/4	NA											-	VEER IN
, ,		<u> </u>		ž			7	7		\bigcirc				* *													ENGIN
MODHING NO: D6 3	WATER DEPTH: 22	BOTTOM TYPE:		COMPONENTS		BUOY HARDWARE	DETACH. LINK	CROUND RING		NO VISIBLE WERE	NEAR BUOY	RISER MIDDLE	NEAR GRD RG	-CHOUND RING	UPPER END	LEG MIDDLE	ENTERS BOTTOM	UPPER END	LEG MIDDLE	ENTERS BOTTOM	UPPER END	LEG MIDDLE	ENTERS BOTTOM	LIPPER END	MEG MEDDLE	ENTERS BOTTOM	DATE: 5.9.83 ENGINEER IN CHARGE

MRG ID = DGM GENERAL LOC = Middle Loch (ISMF) DES CLASS = C

DATE ESTAB = 1950 DEPTH = 35.0 ft./MLV) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\circ}-35.4^{\circ}$ LONG. COORD. (W) = $157^{\circ}-59-13.4^{\circ}$

BUOY TYPE = Ricer-chain of housepipe SIZE = 126x6hi

FENDER = Pubber FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4"

SINKER = __ WT. OF SINKER = __ PADEYE SIZE = __

OF ANCHORS = ____

PADEYE SIZE = 2/4 6
PADEYE SIZE = ____
PADEYE SIZE = ____
PADEYE SIZE = ____

USAGE DURING PAST YEAR =

TYPE OF SHIPS MOORED = ? /OTEC/DD948

DATE OF LAST REPAIR/COST = 1976/\$2,000

DATE OF LAST OVERHAUL/COST = ?/?

DATE OF LAST UNDERWATER INSPECTION = 1979

CONDUCTED BY = CHECON (UCT TWO)

NEXT SCHED. REPAIR = 1987

NEXT SCHED. OVERHAUL .= 1964

DATE SHEET COMPILED = 8-82/NS

MRG ID = DES CLASS = D

DATE ESTAB = 1944- DEPTH = 24.0 ft. (MLY) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\prime}-33.4^{\circ}$ LONG. COORD. (W) = $157^{\circ}-59^{\prime}-15.5^{\circ}$

BUOY TYPE = Riser-chain w/ kawsepipe SIZE = 12'4 × 6'hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = 23/2.

SINKER = ___ WT. OF SINKER = ___ PADEYE SIZE = ___

OF ANCHORS = |

ANCHOR 1 WT = 66,000 # PAD
ANCHOR 2 WT = PAD
ANCHOR 3 WT = PAD
ANCHOR 4 WT = PAD
PAD

PADEYE SIZE = 2/4 P
PADEYE SIZE = PADEYE SIZE = PADEYE SIZE = -

USAGE DURING PAST YEAR = -

TYPE OF SHIPS MOORED = ?/OTEC/DD948

DATE OF LAST REPAIR/COST = 1979/ \$6,780

DATE OF LAST OVERHAUL/COST = ?/?

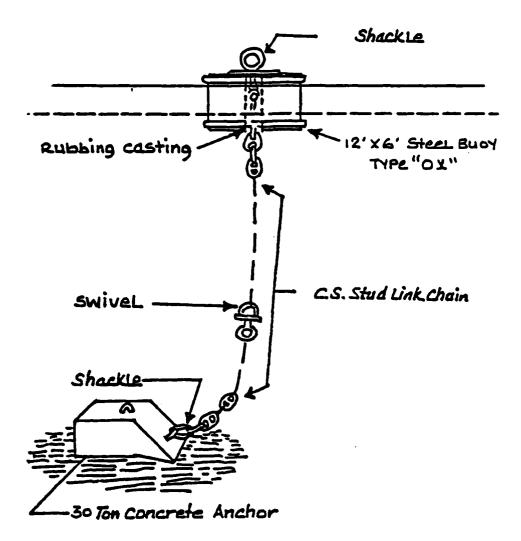
DATE OF LAST UNDERWATER INSPECTION = 1979

CONDUCTED BY = CHESDIV (LCT TWO)

NEXT SCHED. REPAIR = 1967

NEXT SCHED. OVERHAUL = 1924

DATE SHEET COMPILED = 6-82/45



MOORING D6M OR D6S SCHEMATIC DRAWING

INSPECTION RESULTS

D7N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated, has two rubber fenders and a 2-inch pipe chafing rail. The top hardware and the buoy are in good condition.

Riser

The riser is comprised of 2 3/4-inch chain in good condition. The chain enters the bottom at a depth of 30 feet.

Anchor

H 448 334 (157) (157) (158) (158)

The anchor was not visible and could not be inspected.

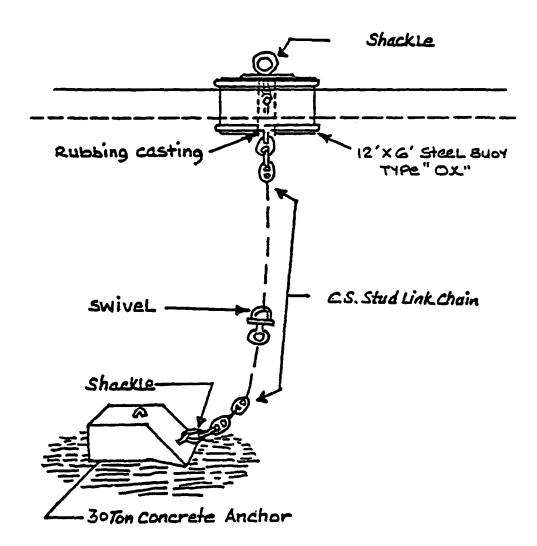
Recommendations

The mooring was overhauled in August 1982 and is in satisfactory condition for continued use as a class D mooring.

MOORING NO.:	N O		CLASS		ŀ	LOCAT	NOI: K	नंता	VH77	1.21.2	62,2	LOCATION: MID, LOCHLAT: 21 22 39.6 LONG: 157 59 13.9"
WATER DEPTIL:	PTH: 30	- 0	₹ 	ANCHOR SIZ	SIZE/T)	rPE: L	IDK#	CONG	2 BUOY	TYPE:	2,0	ETTYPE: LIIDK# CONG. BUOY TYPE: 12 4 X 6 HAWSEPIPE (NOT IN USE)
BOTTOM TYPE:	_	□ SAND		MUD MUD		CLAY		CORAL		ROCK	Visibi	Visibility 4 D = depth NI = not inspected, inaccessib
							COND	CONDITION				
CO	COMPONENTS		Z	NEW	SI	SINGLE LINK %	NK %	noa	DOUBLE LINK %	×	d	COMMENT
		_			9 6	ġ S	89	• 06	÷08	89		
BUO	BUOY HARDWARE											MODEING OVERHAULED 5-82
SHA	SHACKLE		7									I
GROW	GROUND RING	.,	7									
(No VISI	NO VISIBLE WEAR	AR)										
	NEAR BUOY			274	7			7		·	7.0	
RISER	MIDDLE			_	7			7			15	23" 60/NO-GO GAUGE
	NEAR GRD RG	9		>	7			7			30	
7	CROUND RING		*	30	HAIR	PWG	A AUT	HAIRPINON ANTHOR PER AS-BUILTS)	ie As	BULL	B	ANCHOR NOT VISIBLE
	UPPER END			AIN								
LEG PEG PEG PEG PEG PEG PEG PEG PEG PEG P	MIDDLE			_								
¥ .	ENTERS BOTTOM	TOM										
GBOUND	UPPEH END											
LEG NO B	MIDDLE											
	ENTERS BOTTOM	LOM										
O CO	LIPPER END											
LEG	MIDDLE											
2	ENTERS BOTTOM	ГОМ										
CROUND	UPPER END											
1 EG	MIDDLE											
	ENTERS BOTTOM	LOM		4								
DATE	58.9.5		GINE	ENGINETIS IN CHA		A Mary	ANG	v		EBC. M	1474	*EVE ON ANCTION TELL ON ANCHOR

MRG ID = D7N GENERAL LOC = Middle Loch (ISMF) DES CLASS = D

LAT. COORD. (N) =
$$21^{\circ} - 22' - 39.6''$$
 LONG. COORD. (W) = $157^{\circ} - 59' - 13.9''$



MOORING D7N SCHEMATIC DRAWING

INSPECTION REPORT

D7M

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It is fiberglass coated, has two rubber fenders, and a 2-inch galvanized pipe chafing rail. The buoy and its top hardware are in good condition.

Riser

All double link measurements of the riser chain were greater than 90 percent of its original wire diameter. The riser is in good condition and enters the bottom at a water depth of 20 feet.

Anchor

The anchor was not visible and could not be inspected.

Recommendations

This mooring was overhauled in August, 1981 and is in satisfactory condition for continued use as a class C mooring.

MOORING NO.:	M DIM	CLASS	וע		LOCAT	ON: W	का व	EN TO	2762	7 38	LOCATION: MID-LOCH LAT: 21-22 38.210NG: 157°59 16"
WATER DEPTH:	III: 20		ANCHOR	SIZE/TY	PE: 1-6	OK	CONC	. BUOY	TYPE: Ľ	Z, X	ANCHOR SIZE/TYPE: 1-60K# CONC. BUOY TYPE: 124 X6" HAWSEPIPE (NOT IN USE)
BOTTOM TYPE:	PE: SAND		MUD MUD	_	CLAY		CORAL		Пвоск	Visibil	Visibility 4 D = depth NI = not inspected, inaccessible
						CONDITION	TION				
CO	COMPONENTS	ž	NEW	SIA	SINGLE LINK %	X X	DOUE	DOUBLE LINK %	*	D	COMMENT
				÷06	+08	-08	÷06	+08	-080		
BUO	BUOY HARDWARE										MOORING OVERHAULED 1-81
SHA	SHACKLE	7									BUOY IN ESSENTIALLY NEW COND.
DETACE	DETACH, LINK	7									
AND TINK	ZNZ	7									
(No UISI	(NO VISIBLE WEAR)										
	NEAR BUOY		23/4	7			7			9	
AISER	MIDDLE		_	7			7			10,	23" Cof No. Go GAUGE
	NEAR GRD RG		>	7			7			25,	
神	GROUND RIMG	*	25	HAIR	2pm	2 4 2	HOR	PER A	RPINON ANCHOR PER AS-BUILTS)	13.	ANCHOR NOT VISIBLE
	UPPER END		NA								
LEG	MIDDLE										
MO. A	ENTERS BOTTOM										
GRANGES	UPPER END										
LEG NO B	MIDDLE										
	ENTERS BOTTOM								-		
Control	UPPER END										
1 EG CONTO	MIDDLE										
	ENTERS BOTTOM										
CROUND	UPPER END										
1 EG	MIDDLE										
	ENTERS BOTTOM		4								
	5.6.83	EALCHAI	EED IN C	20044	F	THOMAS	44		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1	901/11/10 10 10 1 X XXX XXX XXX XXX XXX XXX XXX

PERAS-BUILTS

MRG ID = D7M GENERAL LOC = Middle Loch (ISMF) DES CLASS = C

DATE ESTAB = 1950 DEPTH = 29.0 ft./MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}22^{\prime}-36.2^{\circ}$ LONG. COORD. (W) = $157^{\circ}-59^{\prime}-16.0^{\circ}$

BUOY TYPE = Riscr-chain of hardsepipe SIZE = 120 x 6 hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = $2^{3/4}$

SINKER = ___ WT. OF SINKER = ___ PADEYE SIZE = ___

OF ANCHORS = /

PADEYE SIZE = PADEYE SIZE =

PADEYE SIZE = PADEYE SIZE =

USAGE DURING PAST YEAR =

TYPE OF SHIPS MOORED = ? / DD 34

DATE OF LAST REPAIR/COST = 1975/37,000

DATE OF LAST OVERHAUL/COST = (-8)/625,000 (#)

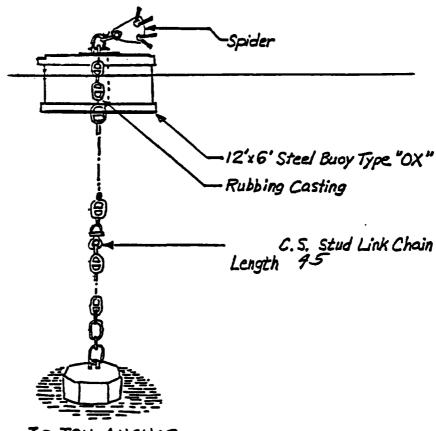
DATE OF LAST UNDERWATER INSPECTION = CHESCIV (UCT TWO)

NEXT SCHED. REPAIR = 1984

NEXT SCHED. OVERHAUL = 1086

DATE SHEET COMPILED = 5-82/MS

(4) Contr. NG2471-80-C-1422 (Heavy-Tibbels): Remove & replace mooning and refurbish busy,



30 TON ANCHOR

MOORING D7M SCHEMATIC DRAWING

INSPECTION REPORT

D7S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The buoy was overhauled in January, 1981 and is in good condition. The top hardware all measured greater than 90 percent of original wire diameter.

Riser

SAME TO AGE TO SEE THE SAME AS SAME AS SAME

The riser chain which was replaced during overhaul in 1981 is in good condition. The riser enters the bottom at a water depth of 20 feet.

Anchor

The anchor was not visible and could not be inspected.

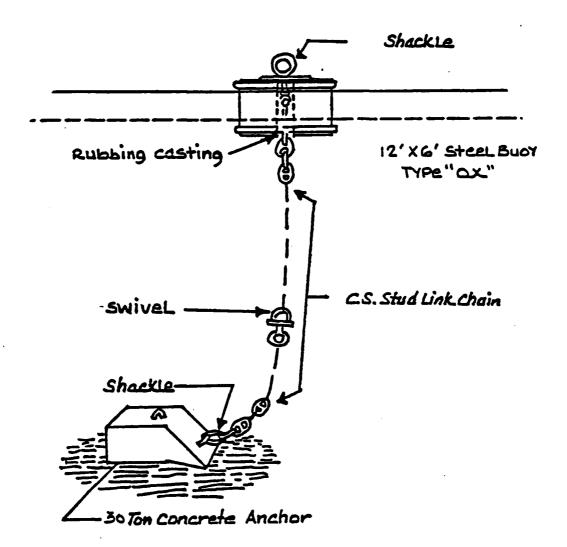
Recommendation

This mooring is in satisfactory condtion for continued use as a class ${\sf D}$ mooring.

MOORING NO.:	MO: D75	- [CLASS	Δ		100	ATION	AM	707	H.A.	710	32,23	LOCATION: MID. LOCH LAT 21 22 36-6 LONG: 151 52 18.1
WATER DEPTH:		,02	₹ 	NCHOR :	SIZE/I	r YPE:	1-60	7#7	DVC.	BUOY	TYPE:	4,7	ANCHOR SIZE/TYPE: 1-60K# CONC. BUOY TYPE: 12 4 X6' HAWSEPIPE (NOT IN USE)
BOTTOM TYPE:		SAND]	(1) Táun		CLAY	Α	CORAL	RAL		Пвоск	Visibi	Visibility _ 6 _ D = depth NI = not inspected, inaccessible
						i	00	CONDITION	NO				
CO	COMPONENTS		ž	NEW	S	SINGLE LINK %	LINK 9	,	DOUB	DOUBLE LINK %	K %	٥	COMMENT
					8	8 0	8		÷06	à	99		
NOOR	BUOY HARDWARE							_					MODEINE ON FEHANCED 1-81
DETAL	DEFACH. LINK		7					_					_
GROU	GROUND RING		7										CONDITION.
(NO VIS)	(NO VISIBLE WEAR)	(K)											
	NEAR BUOY			24.	7	\			7			TOP	_
RISER	MIDDLE				7				7			10,	27" CO/NO-GO GAUGE
į	NEAR GRD RG	g		-	7			_	7			102	
-COHIC	CHOUND HING		*	24			_						ANCHOR NOT VISIBLE
34.000	UPPER END			N/A									
LEG NO A	MIDDLE												
	ENTERS BOTTOM	LOM											
CHOUND	UPPEH END								-				
LEG NO	MIDDLE								-	·			
	ENTERS BOTTOM	TOM							-				
0000	UPPER END								<u>-</u>				
LEG NO C	MIDDLE												
	ENTERS BOTTOM	LOM											
	UPPER END												
N C	MIDDLE												
	ENTERS BOTTOM	MOI		->									
DAIL	5.6.83		GINE	ENGINEER IN CHARGE:	HARG	7	7	1HOMAS	v	} o	ERS: A	STIL	DIVERS: AKTIN) THICANOW * PADENERON

LAT. COORD. (N) =
$$\frac{21^{\circ}-22^{\prime}-36.6^{\circ}}{}$$
 LONG. COORD. (W) = $\frac{157^{\circ}-59^{\prime}-18.1^{\circ}}{}$

DATE OF LAST OVERHAUL/COST =
$$(1-8)/*25,000(*)$$



MOORING D7S
SCHEMATIC DRAWING

INSPECTION RESULTS

D8N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in January 1981, and the buoy is in good condition. The top jewelry wire diameter measurements were all greater than 90 percent of their original diameter size.

Riser

The riser chain and accessories were replaced during the 1981 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enters the bottom at a water depth of 30 feet.

Anchor

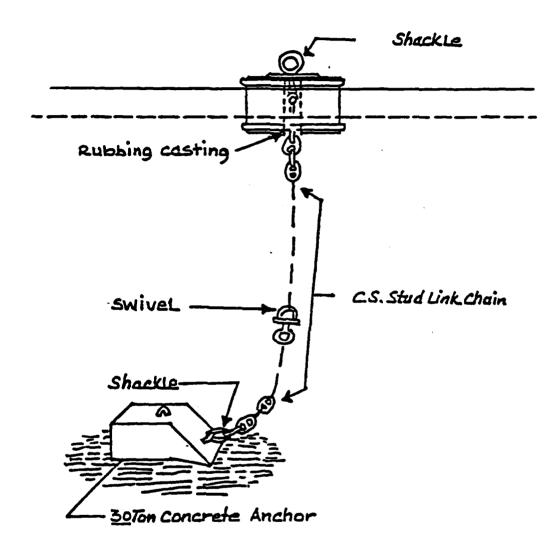
The anchor was not visible and could not be inspected.

Recommendation

This mooring is in satisfactory condition for continued use as a class ${\sf D}$ mooring.

MOORING NO.:	- 1	DAN	_CLASS:			LOCAT	ION: M	07 'Q1	CHIA	1.21%	25.27	LOCATION: MID. LOCH LAT: 21°22 42.7 LONG: 157°59 16.5"
WATER DEPTH:	3115	70	Ì	ANCHOR	SIZE/T\	.he: [-	, LoK	CONC	4 BUOY	TYPE: 1	9,2	ANCHOR SIZE/TYPE: 1- GOK# CONC, BUOY TYPE: 12 4 X 6 HAW/SEPIPE (IN USE)
BOTTOM TYPE:	(PE:	SAND	0	E MUD		CLAY		CORAL		ROCK	Visibility_	ility $\frac{1}{C}$ D = depth NI = not inspected, inaccessible
							CONDITION	TION				
CO	COMPONENTS	TS	ž	NEW	SIF	SINGLE LINK %	NK %	DOO	DOUBLE LINK %	к %	Q	COMMENT
			ļ		96	+08	-08	•06	¥08	-08		
BUOY	BUOY HARDWARE	VARE										MOOKING OVERHAULED 1-81
DETACH LINK	元	12K	7									BUOY IN ESSENTIALLY WEN COND.
CROL	DOC	CROUND RING	7									
(NO VISIBLE WEAR)	BLE	VEAR)										
	NEAR BUOY	BUOY		23,	7			7			TOP	
RISER	MIDDLE	.6			7			7			18,	23" 60/NO-60 GAUGE
	NEAR	NEAR GRD RG		>	7			7			B	
-6HC	GROUND HING	₩G.	τ¥ 2	14.7		PING	CLU	HAIRPING CLUMP-PER AS-BUILTS)	25.	BVIL	क्र	CLUMP BURIED
Grand G	UPPER END	END		U/A					٠			
LEG NO A	MIDDLE	.E		_								
		ENTERS BOTTOM										
GROWIND	UPPER END	END										
LEG NO B	MIDDLE	Ē										
	ENTER	ENTERS BOTTOM										
CALCAS	UPPER END	END										
1 E G	MIDDLE	E										
	ENTER	ENTERS BOTTOM										•
	LIPPER END	END		•				i				
1 E G	MIDDLE	E										•
	LNIER	LNIERS BOTTOM		4								
DATE	2.6	5.6.83	ENGIN	- ENGINITRI IN CHARGE: THOMAS	HARGE	H	KOM	95	MG —	Ens: A	MSTI	DIVERS: AUSTIN/TENCANOW * PADEYE ON CLUMP

PER AS-BUILTS



MOORING D8N SCHEMATIC DRAWING

INSPECTION RESULTS

D8M

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in January 1981, and the buoy is in good condition. The top jewelry wire diameter measurements were all greater than 90 percent of their original diameter size.

Riser

The riser chain and accessories were replaced during the 1981 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enters the bottom at a water depth of 30 feet.

Anchor

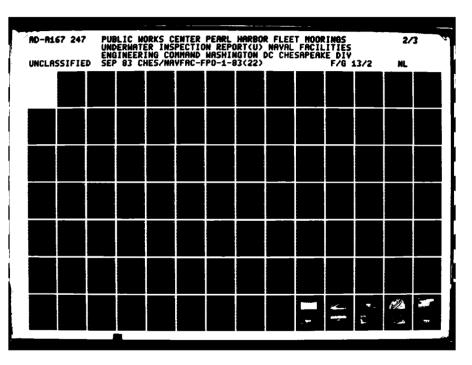
The anchor was not visible and could not be inspected.

Recommendation

This mooring is in satisfactory condition for continued use as a class ${\sf C}$ mooring.

Note the filter 20 Anchor size ft year 1.60 k could be filter	WATER DEP											
NEW SHOTOWN NI NEW SINGLE LINK \$ DOUBLE				ANCHOR	SIZE/T	YPE: L	-60K	# 607	C BUOY	TYPE:	2,0	
NEW SINGLE LINK % DOUBLE LIN	BOTTOM TY		Q	IJ WOL		CLA		CORAL		ROCK	Visibi	6 D = depth
NEAR BLOX C STATE LINK & DOUBLE LINK & DOUBL							CONC	ITION				
Note the bound of the bound o	CON	APONENTS	ž	NEW	S	NGLE L	INK &	nod	BLE LIN	IK %	0	COMMENT
NEAR BUOY 27 (HAICPIN ON ANZHOR-PERAS-BUDDLE ENTERS BOTTOM NIDDLE ENTERS					9 8	90	9 8	90¢	+08	-08		
NAP EINC C SLE WEAR) NEAR BUOY NEAR BUOY OTHER END NAME OF C NEAR BUOY 24 C NEAR BUOY 25 CHAICPIN ON ANSCHOR-PER A5-B NAME OF C NA	BUOY	HARDWARE										1
NAP EINZ NEAR BUOY NEAR BUOY NEAR GRO RG NOTIFIES BOTTOM NIPPER END NIPP	DETA	H. LINK	7									BUOV IN ESSENTIALLY ()EW CONT
NEAR BUOY 2 4 70 70 70 70 70 70 70	GROU	ND RING	7									NO MAC LOUIS STATE OF THE PARTY
NEAR BUOY 2	NO VISI	SLE WEAR)										
NEAR BLOY 2												
MIDDLE NEAR GRID RG NEAR GRID RG NEAR GRID RG NICHAR BOTTOM NICHES BOTTO		NEAR BUOY		<u>04</u>	<u> </u>			7			100	
NEAR GRURG OTHER BOLL UPPER END MIDDLE ENTERS BOTTOM MIDLE ENTERS BOTTOM MIDDLE ENT	RISER	MIDDI E		_	Ĭ			7			12	60/100.60
UPPER END MIDDLE ENTERS BOTTOM		NEAR GRD RG		A	7			7			30.	
UPPER END N/A ANCHOR MIDDLE ANCHOR ENTERS BOTTOM C UPPEH END C MIDDLE C ENTERS BOTTOM C	OHD	-BNH GMO	*		₹ ₹		ON A	SCH	R. P	ER A	3-1	ULTS)
MIDDLE MIDDLE ENTERS BOTTOM MIDDLE	0,41,000	UPPER END		_				-				30
INPER BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE TOTAL STATEMENT	LEG NO A	MIDDLE		_								,
MIDDLE ENTERS BOT TOM UPPEH END MIDDLE ENTERS BOTTOM UPPEH END MIDDLE ENTERS BOTTOM UPPEH END MIDDLE INTERS BOTTOM		ENTERS BOTTOM										
MIDDLE ENTERS BOTTOM UPPEH END MIDDLE ENTERS BÓTTOM UPPER END MIDDLE INTERS BOTTOM		IPPEH END										
ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE INTERS BOTTOM	LEG NO B	MIDDLE										
MIDDLE ENTERS BÓTTOM UPPER END MIDDLE INTERS BOTTOM		ENTERS BOTTOM										
MIDDLE ENTERS BÓTTOM UPPER END MIDDLE LINIERS BOTTOM	_	UPPEH END										
ENTERS BOTTOM UPPER END MIDDLE INTERS BOTTOM		MIDDLE										
UPPER END MIDDLE INTERSBOTTOM	_	ENTERS BOTTOM										
	_	UPPER END										
_	_	MIDDI E										
	_	INTERSBOTTOM		4								

PER AS-BUILTS





MICROCOPY

CHART

MRG ID = DBM GENERAL LOC = Middle Loch (ISMF)

DES CLASS =

DATE ESTAB = 1950

DEPTH = 34.0 ft. (MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\dagger}-41\cdot2^{\dagger}$ LONG. COORD. (W) = $157^{\circ}-59-18.6^{\dagger}$

BUOY TYPE = Riser-chain wy hawsepipe SIZE = 120 × 6 hi

FENDER = Rubber

FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4"

SINKER = - WT. OF SINKER = -

PADEYE SIZE =

OF ANCHORS =

ANCHOR 1 WT = 60,000 # ANCHOR 2 WT = 1 ANCHOR 3 WT =

PADEYE SIZE = PADEYE SIZE = PADEYE SIZE = PADEYE SIZE =

ANCHOR 4 WT =

USAGE DURING PAST YEAR =

TYPE OF SHIPS MOORED = ?/YW101/YW13/Y0G-68

DATE OF LAST REPAIR/COST = 1977/\$2,150

DATE OF LAST OVERHAUL/COST = 1-81 / \$25,000 (*)

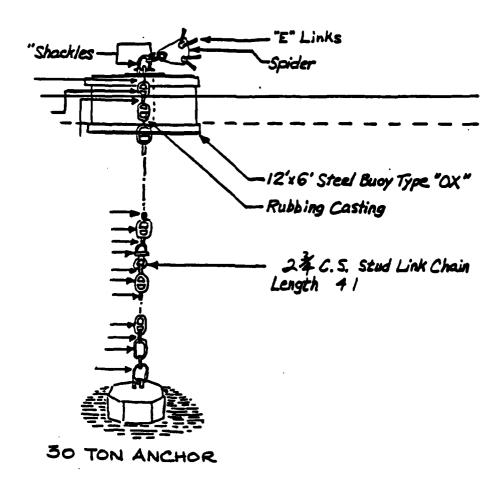
DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = 1984

NEXT SCHED. OVERHAUL = 1986

DATE SHEET COMPILED = 8-82/MS

(4) Contr. NGZ471-BO-C-1422 (Healy-Tibbets): Remove A replace mooring and refurbish busy



MOORING D8M SCHEMATIC DRAWING

INSPECTION RESULTS

D8S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in December, 1982, and the buoy is in good condition.

Riser

2. 222 BXX XXX XXX XX XXX XX

The riser chain and accessories were replaced during the 1982 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enters the bottom at a water depth of 20 feet.

Anchor

The anchor was not visible and could not be inspected.

Recommendation

This mooring is in satisfactory condition for continued use as a class ${\tt D}$ mooring.

MOORING NO.:	280 D	CLASS			LOCAT	M. WO	वा वा	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1.21%	2 39	LOCATION: MID. LACH LAT: 21 22 39.7 LONG: 157 29 20.7"
MATER DEPTH:	PTH: 20'		ANCHOR SIZE/T	SIZE/TY	Pe: 1-	Gok	*CON	f euoy	TYPE:	0,2	VPE: 1- 60K# CONK BUOY TYPE: 12' \$\pris \ HAWSEPIPE
BOTTOM TYPE:	rPE: SAND	QNI	D MUD		CLAY		CORAL		ROCK	Visibility —	ity 6 D = depth Nt = not inspected, inaccessible
					,	CONDITION	TON				
10 3	COMPONENTS	ž	NEW	SIR	INGLE LINK &	WK %	DOO	DOUBLE LINK %	K K	٥	COMMENT
				ġ	108	8	93	ŝ	ġ		
BUO	BUOY HARDWARE										MODE IN CONTENTAL OF 12 - RZ
SHA	SHACKLE	7									BIDY IN ESSENTIALLY LIEW COLD
DET	DETACH. LINK	7						<u> </u>			
P. 5.	P.S. LINK	7									
2H7	SHACKLE	7									NO VISIBLE MEAR
	NEAR BUOY		22.	7	·		7			100	
RISER	MIDDLE			7			7			_	23" 60/NO.60 GAUGE
	NEAR GRD RG			7			7			_	
-OMC	GHOOMD RING-	*	12/4								ANCHOP INT VISIBLE
900	LIPPER END										
LEG	MIDDLE		_		-						
V .	ENTERS BOTTOM	9				-					
OMINORS	IIPPER END										
LEG NO B	MIDDLE										
	ENTERS BOTTOM	-					-				
40 mm 70 0 0	LIPPEH END										
	MIDD1 E						-		 		
	ENTERS BOTTOM										
GROUMO	LIPPER END										
1 EG	MIDDLE							 -			
	ENTERS BOTTOM		4								
DA II.:	5.6.83		ENGINEER IN CHARGE	IARGE:	1	THOMAS	n	M	ERS: 🐴	KTIN	DIVERS AUSTIN TELEGNOW *PER AS-BULT

DATE ESTAB = 1945 DEPTH = 23.0 ft. (MLW) BOTTOM = Mud

LAT. COORD. (N) =
$$21'-22'-39.7''$$

LAT. COORD. (N) = $\frac{21-22-39.7}{}$ LONG. COORD. (W) = $\frac{157-59-20.7}{}$

FENDER = Rubber FIBERGLASS COATING = Yes

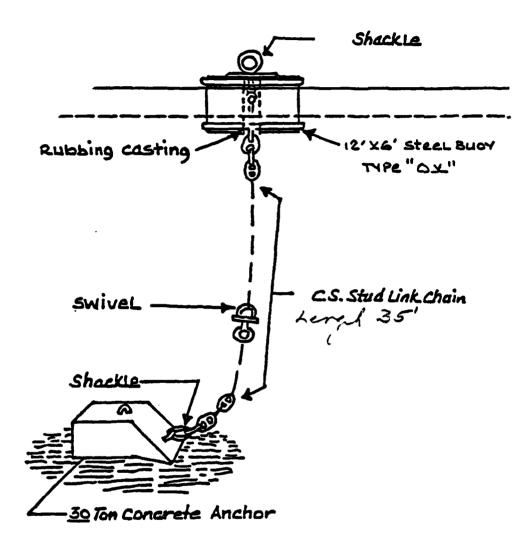
SINKER = - WT. OF SINKER = - PADEYE SIZE =

PADEYE SIZE = 2/4 2

TYPE OF SHIPS MOORED = ? / 7w 101/ 7w 83/ 406-68

DATE OF LAST OVERHAUL/COST = +- B+/ *** 12-82/*31,000(+)

C-1422 (Healy-Tibbets): Demove & replace moo



MOORING D8S
SCHEMATIC DRAWING

INSPECTION RESULTS

D9N

Buoy

This buoy is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawse-pipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in 1982, and the buoy is in good condition. The top jewelry appeared to consist of new components.

Riser

The riser chain and accessories were replaced during the 1982 overhaul. The riser is in good condition with all measurements greater than 90 percent of original wire size.

Ground Ring

The ground ring was located about $10\ \text{feet}$ below the buoy and was found to be in good condition.

Ground Legs

Although the representative schematic drawing of this mooring shows the mooring to have four legs and four 30-ton concrete anchors, both the 1979 and this current inspection indicate only three chain legs attached to the ground ring. Since the mooring was removed and overhauled in December of 1982, it must be assumed that the original design was modified and only three legs were installed. Three chain legs enter the bottom about 10 feet below the ground ring. All three legs are in good condition.

Anchors/Concrete Sinker

None were visible for inspection.

Recommendations

This mooring is in satisfactory condition for continued use as a class A mooring.

MOOHING NO.:	- 1	Nea	CLASS:	4		LOCAT	ON: W	न वा	CHIA	1.22	2.45	- LOCATION: MID. LOCH LAT: 21°22'48.9" ONG: 157°59'19.1"
WATER DEPTH:	EPTH:	70	Ì	ANCHOR SIZE/T	SIZE/TY	M M	GOK	#CON	<u>Ç</u> euoy	TYPE:]	242	YPE: 3-60K#CONGNOV TYPE: 124 X6 HAWSEPIPE (IN USE)
BOTTOM TYPE	rype:	D SAND		ON THE		CLAY	Ì	CORAL		□ ROCK	Visibility	ity D = depth NI = not inspected, inaccessible
							CONDITION	TION				
ಶ 	COMPONENTS	15	ž	NEW	NIS	SINGLE LINK &	X X	noa	DOUBLE LINK &	×	a	COMMENT
					2 6	80+	B 0.	8	98	98		
BUC	BUOY HARDWARE	VARE										MODEING AVERHANI CTS 12.82
SHA	SHACKLE	•••	7									2
DETA	DETACH. LINK	INK	7									S A S A S A S A S A S A S A S A S A S A
P. S.	RS. LINK		7									
20 of	SIBLE	(NO VISIBLE WEAR	\odot									
	NEAR BUOY	BUOY		203	72	-		1/2			100	
RISER	MIDDLE	E			72			3				23" 40/NO· 40 6AU6E
00	NEAR (NEAR GRD RG			3			3			-	
₹	SHOUND RING	36 -		" 2 2"	Z						2	
GROUND	LIPPER END	END		2%	3			1/2				6R00000 1 EGS BITTER
NO A	MIDDLE	E	7									10,4201
	\rightarrow	ENTERS BOTTOM	7									ANCHORS NOT VISIRIE
GROUND	UPPER END	END			ž		-	77				
1 EG NO B	MIDDLE		7				-	-				
	_	ENTERS BOTTOM	Z									
CHOUNE	IJPPEH END	END			73			1/2				
1 FG 2000	MIDDLE		7							T		
		ENTERS BOTTOM	7					-				
ONIOGS	LIPPER END	ON		NA			\vdash	 -	+		\dagger	
LEG PEG NO D	MIDDLE			-		\vdash	\vdash		\vdash	1	\dagger	
		ENTERS BOTTOM						 	+	_		
DAIL	5.6	S.6.83 ENGINER IN CHARGE:	ENGINE	EIR IN CIE	ARGE:	THOMAS	a M	25	DIVE	IRS:	185	DIVERS: ASSTIN TEUCANOW

MRG ID = D9N GENERAL LOC = Middle Loch (ISMF) DES CLASS = A (11)

DATE ESTAB = 1946 DEPTH = 27.0 ft./MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\prime}-45.9^{\prime\prime}$ LONG. COORD. (W) = $157^{\circ}-59^{\prime}-19.1^{\prime\prime}$

BUOY TYPE = Riser-chain of hawsepipe SIZE = 12/4×6/hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = $2\frac{3}{4}$

SINKER = 1 WT. OF SINKER = 60,000 # PADEYE SIZE = 24 4

OF ANCHORS = 3

ANCHOR 4 WT = '

ANCHOR 1 WT = 60,000 # ANCHOR 2 WT = (Co.)

ANCHOR 3 WT = (Co.) PADEYE SIZE = (Co.)
PADEYE SIZE = (Co.)
PADEYE SIZE = (Co.)

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = YWN/YOG/YOY/YOW

DATE OF LAST REPAIR/COST = 1977/\$2,450

DATE OF LAST OVERHAUL/COST = 4-82/451,000 (++)

DATE OF LAST UNDERWATER INSPECTION = 1979

CONDUCTED BY = CHESDIV (UCT Two)

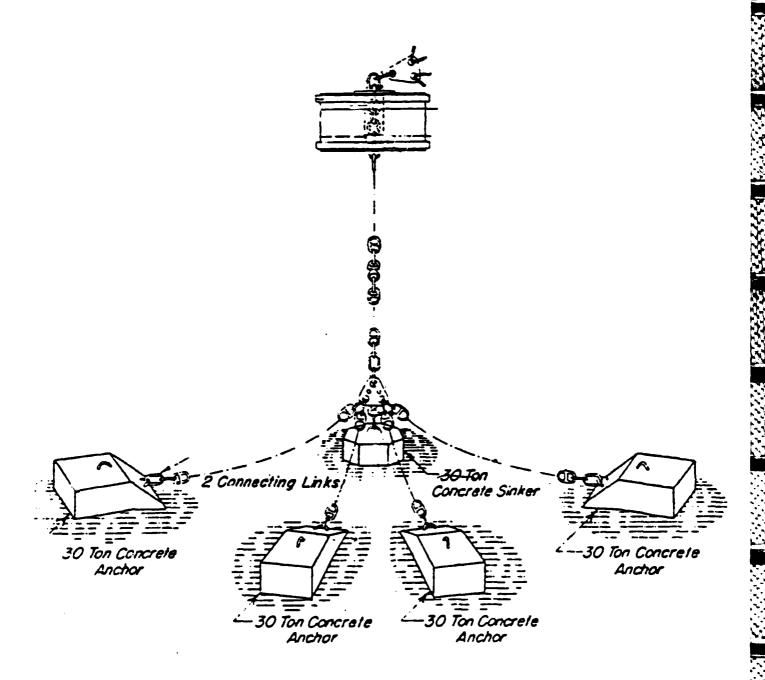
NEXT SCHED. REPAIR = 1984

NEXT SCHED. OVERHAUL = 1982 (**)

DATE SHEET COMPILED = 4-83/MS

(+) Own graded to class to after 1979 U/W insp.

(**) Overhaul expected to be accomplished by Contr. N62471-82-C-2164



MOORING D9N
SCHEMATIC DRAWING

D9M

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in December 1982, and the buoy is in good condition.

Riser

The riser chain and accessories were replaced during the 1982 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent or original diameter. The riser enters the bottom at a water depth of 20 feet.

Ground Ring

The ground ring was also replaced in the 1982 overhaul and is partially buried in the bottom. The ground ring is in good condition.

Ground Legs/Anchors/Concrete Sinkers

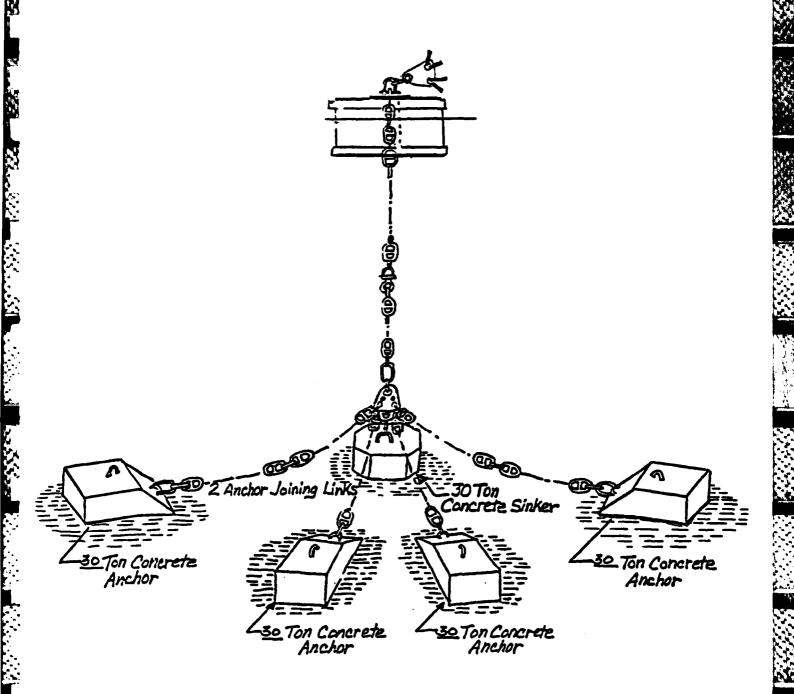
Not visible for inspection.

Recommendation

This mooring is in satisfactory condition for continued use as a class $\boldsymbol{\mathsf{A}}$ mooring.

MOORING NO.:	MGa	CLASS:	A		_ LOCA1	10N: 1	ווסיתו	CH LA		7.44	LOCATION: MID, LOCH LAT: 21 2244.4.0NG: 13 1 34 19.1
WATER DEPTH:	.m. 20	4	NCHOR	S1ZE/T	YPE:4	-60K	# CON	GBUOY	TYPE:	4.21	ANCHIOR SIZEITYPE: 4-60KH CONF. BUOY TYPE: 12 \$ X6 HAWSEPIPE (D) USE)
BOTTOM TYPE	rPE: SAND				CLAY		CORAL		ROCK	Visibi	Visibility D = depth NI = not inspected, inaccessib
						COND	CONDITION				
CO	COMPONENTS	ž	NEW	S	SINGLE LINK %	INK %	DOO	DOUBLE LINK %	×	a	COMMENT
				ŝ	₩	-98	÷06	• 00	-98		
BUOY	BUOY HARDWARE										MODEING OVERHAULED 12-82
SHACKLE	KLE	7									BUOY IN ESSENTALLY NEW
DETA	DETACH, LINK	7									CONDITION.
END LINK	LINK	7									
(No VIS	NO VISIBLE WEAR	_									
	NEAR BUOY		242				7/2			JOP	
RISER	MIDDLE		_	<u>z</u>			73			,01	23" CO/NO.60 GAUGE
	NEAR GRD RG		>	3			72			22	
7	GROUND RING-		2%	7							
	UPPER END		1/62	7							4 CEOUND - LEG LINKS \$
GHOUND LEG	MIDDLE	7									HAIRPIN VISIBLE ON CLUMP
¥ .	ENTERS BOTTOM	7									
Orannyo	UPPER END			7	_						GROUND LEGS & ANCHORS
LEG NO C	MIDDLE	7									BURIED
	ENTERS BOTTOM	7									
	UPPER END		1	7							
LEG LEG	MIDDLE	7									
	ENTERS BOTTOM	7									
	UPPER END			7							
LEG NO D	MIDDLE	7									
	ENTERS BOTTOM	7									
71.40	5.6.83	C ALC: LA	164. (1) 181 C	00011	j	THOMAS	٧ <		,505,	γļγ	A MSTIN TONY ANDW

LAT. COORD. (N) =
$$21^{\circ}-22^{\prime}-44.4^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-54^{\prime}-21.2^{\circ}$



MOORING D9M SCHEMATIC DRAWING

D9S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in December 1982, and the buoy is in good condition.

Riser

The riser chain and accessories were replaced during the 1982 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent or original diameter. The riser enters the bottom at a water depth of 20 feet.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

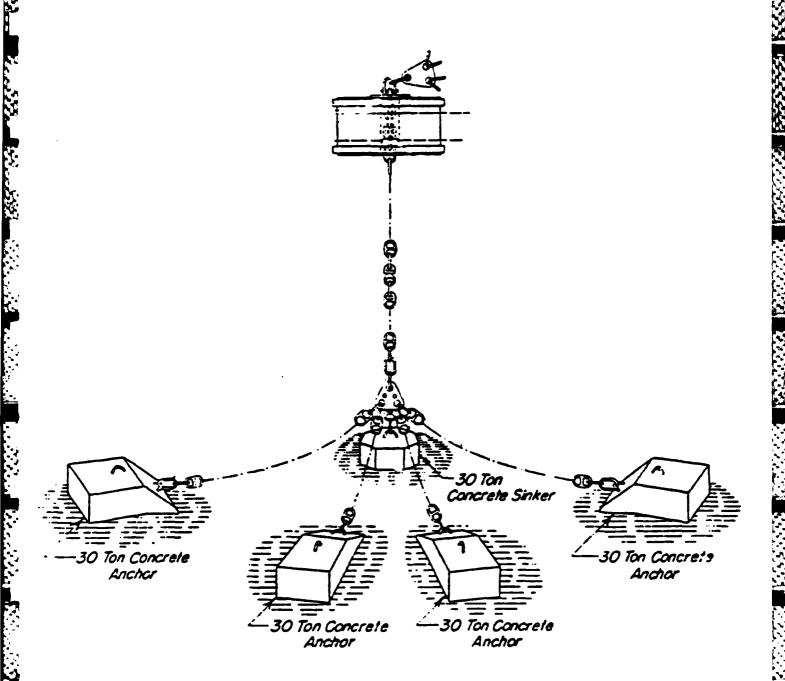
Not visible for inspection.

Recommendation

This mooring is in satisfactory condition for continued use as a class A mooring.

MOORING NO.:	NO: D93	CLASS	4		LOCAT	ION: W	1D. 60	CHIA	12/2	2,41	_LOCATION: MID. LOCHLAT: 21 22 42.9 LONG: 1570 59 23.5
WATER DEPTH:	PTH: 20		NCHOR :	SIZE/TY	PE:4:	bok	ECON	£-auoy	TYPE:_	4,71	ANCHOR SIZE/TYPE: 4- 60/24/201/4-BUOY TYPE: 12' 4 X 6 HAWSEPIPE (IN USE)
BOTTOM TYPE	YPE: SAND		DAYON THE	_	CLAY		CORAL		ROCK	Visibility _	ı Z
						CONDITION	TION				
g	COMPONENTS	ž	NEW	SIA	SINGLE LINK &	X X	DOO	DOUBLE LINK %	* *	a	COMMENT
				ġ	90	-08	+06	90	ģ		
BUO	BUOY HAHDWARE										BUOY OVERHAULED #
SHA	SHACKLE	/									1 174
DETA	DETACH. LINK	7									ESSENTIALLY NEW CONDITION
(No VI)	NO VISIBLE WEAR										
	NEAR BUOY		23/4"	132			3			4	
RISER	MIDDLE		_	72			3			_	27 60/NO.60 GAUGE
	NEAR GRD RG		>	77,			77				1
## O	GHOUND RING-	MAX.	182		HAIRPIN	SO	ON SLUMP				/ Sys I Almost Family
04.000	LIPPER END	<u>/</u>	13/4"	•							- 1
LEG MO &	MIDDLE	7									
	ENTERS BOTTOM	7									
CBOILND	UPPER END	7									
LEG NO B	MIDDLE	7									
	ENFERS BOTTOM	7									
OWIOOS	LIPPER END	7									
LEG NO C	MIDDLE	7						-			
	ENTERS BOTTOM	1									
CROLIND	LIPPER END	7									
NO D	MIDDLE	7									
	(NTERS BOLTOM	7									
DAIL	5.6.83	ENGINE	83 ENGINEER IN CHARGE: THOMAS	IARGE:	144	2MA	N	DIV	EAS: L	2165	DIVERS. ELEST SPEER * DED & PILLITE

SINKER =
$$1$$
 WT. OF SINKER = $60,000 \#$ PADEYE SIZE = $2^{3}/4$



MOORING D9N SCHEMATIC DRAWING

D10N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy has two rubber fenders in good condition. The galvanized pipe chafing rail is partially rusted. The rubbing casting is in good condition.

Riser

S. . 888. SS. . SS

The 2 3/4-inch riser chain wear increases significantly with depth, from over 90 percent of original wire diameter just under the buoy to less than 80 percent near the mud line. A swivel was noted in the riser at a water depth of 17 feet.

Ground Ring

The ground ring was partially buried in the mud bottom at a depth of 20 feet. It was measured by calipers and found to be greater than 90 percent of its original wire size.

Ground Legs/Anchors/Concrete Sinkers

Not visible for inspection.

Recommendation

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of Mooring D10N, the double link measurements of even the most badly worn chain are larger than the 2 1/2-inch double link measurement of the 1 1/4-inch-diameter chain required for an F class mooring. Therefore, the mooring should still be capable of withstanding F class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the F class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING NO.:	MOI DION	_CLASS:	V	Æ	- LOCA	TION:	07 QII	CH LA	12:1	22,49	LOCATION: MID LOCH LAT: 21°22 49. ILONG: 157°59'21.7"
WATER DEPTH:	РП. 20'		ANCHOR	SIZE/T	YPE:4	FOK.	# CON	E. Buoy	TYPE:	12,47	ANCHOR SIZE/TYPE: 4-60K#CONC. BUOY TYPE: 12/4 X 6 HAWSEPIPE (10 USE)
BOTTOM TYPE:	rPE: SAND		[] MUD		CLAY		CORAL		Пвоск	Visibility	lity 6' D - depth NI = not inspected, inaccessible
						CON	CONDITION				
OS	COMPONENTS	ž	NEW	S	SINGLE LINK &	INK %	000	DOUBLE LINK %	1K %	O	COMMENT
				8	90•	-00	1 06	80+	-08		
One	BUOY HARDWARE										FIBERGLASS: GOOD
SINKE	SINKER SHACKLE	7									BUSBER FENDERS: 6000
6ROUA	GROUND RING	7									BUBIZAIL RUSTED
(NO 1/151	(NO VISIBLE WEAR)										RUBBING CASTING OK
,											
	NEAR BUOY		123/4	77			77			Top	
RISER	MIDDLE		_	7	7			77		10,	23" 60/NO. 60 GAUGE
	NEAR GRD RG		>			777			77	20,	
**	CHOUND HING	*	2.14"								CLUMP & GROUND LESS BURIED
241700	UPPER END	7			_						
1 EG	MIDDLE	7									
W	ENTERS BOTTOM	7									
GROUND	UPPER END	7									
LEG NO B	MIDDLE	7									
	ENTERS BOTTOM	7									
Great	UPPER END	7									
LEG LEG	MIDDLE	7									
	ENTERS BOTTOM	7									
CRITATO	UPPER END	7									
LEG NO D	MIDDI E	7									
	ENIERS BOTTOM	7									
DATE	58-7-8	FACIN	ENGINEER IN CITABLE	HARGE	٢	MONT	AS	1	/EBC.	7100	DIEST COSE

LAT. COORD. (N) =
$$21^{2}-49.1^{\circ}$$

LAT. COORD. (N) =
$$21^{\circ}-22^{\prime}-49.1^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-59^{\prime}-21.7^{\circ}$

SINKER = 1 WT. OF SINKER =
$$60,000 \pm 1$$
 PADEYE SIZE = $2/4 \pm 1$

ANCHOR 2 WT =
$$(D_0.)$$

ANCHOR 3 WT = $(C_0.)$

ANCHOR 3 WT =
$$(C_0.)$$

ANCHOR 4 WT = $(D_0.)$

USAGE DURING PAST YEAR = 365 days

DATE OF LAST REPAIR/COST = 1977/\$10,240

DATE OF LAST OVERHAUL/COST = 9-71/?

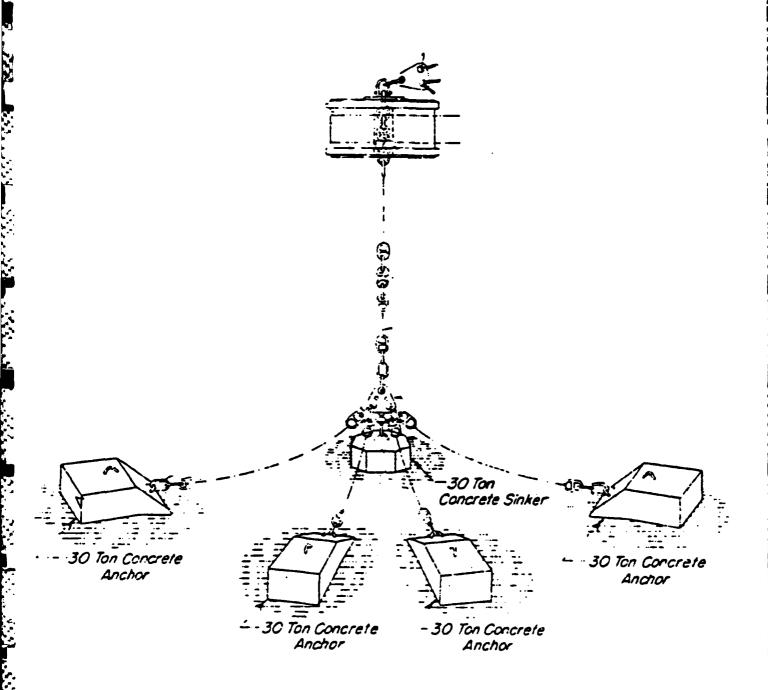
DATE OF LAST UNDERWATER INSPECTION = 1979 CONDUCTED BY = CHESCIN (UCT TWO)

NEXT SCHED. REPAIR = 1986

NEXT SCHED. OVERHAUL = 1963

DATE SHEET COMPILED = 8-82/MS

(*) Down-graded to class E after 1979 U/W Insp.



MOORING D10N SCHEMATIC DRAWING

D10M

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders, both in good condition. The buoy's top steel plate and galvanized pipe chafing rail are only partially rusted, but the top jewelry is severely rusted. About half of the buoy's top was covered with 1 1/2 inches of marine growth, which would indicate that the buoy may have been partially submerged at some time due to being pulled over by a large load. The buoy is currently upright.

Riser

For the most part, the riser chain was measured to be between 80 and 90 percent of its original wire diameter; however, one measurement near the mud line was less than 80 percent. The riser enters the bottom at a depth of 20 feet. The upper chain has about one-half inch of marine growth.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

Not visible for inspection.

Recommendation

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of mooring D10M, the double link measurements of even the most badly worn chain are larger than the 2 1/2-inch double link measurement of the 1 1/4-inch-diameter chain required for an F class mooring. Therefore, the mooring should still be capable of withstanding F class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the F class load limits as defined in NAVFACENGCOM Design Manual DM-26.

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ING NO : DIOM C
DING NO. DIOM C

WATER DEPTH:		70.	4	ANCHOR SIZE/T	SIZE/T\	/PE: 2:	60K#	E CONC	E BUOY	TYPE:	12,0	YPE: 2-60K# CONC. BUOY TYPE: 12 \$ X 6 HAWSEPIPE (NOT IN USE)	E)
BOTTOM LYPE.		DI SAND	İ	OUM [4]		CLAY		CORAL		Пвоск	Visib	Visibility D = depth NI = not inspected, inaccessible	essible
							COND	CONDITION					
COP	COMPONENTS		ž	NEW	SII	SINGLE LINK %	NK %	noa	DOUBLE LINK %	×	a	COMMENT	
					€00	80•	-08	90	90+	-08			
BUO	BUOY HARDWARE											DECKPLATE RUSTED	
SHA	SHACKLE		7									FIBERGLASS INTACT	
SPID	SPIDER W.		7								i	BUOY HAS EEEN HALF SUB-	
48.	4 P.S. LINKS	'n,	2									MERGED ATONE TIME; HALF OF	
HEAVY E	HEAVY RUST/NO VISIBLE	VKI		WEAR								TOP COVERED WITH GROWTH. NOW	-
_	NEAR BUOY			234"		77	7		17		70P	FLOATING LEVEL. RUBBER	·
RISER	MIDDLE				7	7			12		, 01		
10	NEAR GRD RG	ЯĞ		→		7	77		7	7	707	23" 60/NO. GO GAUGE	
	GROUND HING	,	*	24								CLUMP & GIROUND LEGS BURIED	ED
General	UPPER END			234									
LEG CONTRACTOR	MIDDLE		7										
W . A	ENTERS BOTTOM	TIOM	7										
CHOUND	UPPER END		7										
LEG NO B	MIDDLE		,										
	ENTERS BOTTOM	TTOM	7										
	UPPEH END												
LEG CON	MIDDLE												
	ENTERS BOTTOM	MOTI											
Grand Co.	UPPER END												
	MIDDI E												
	ENJERS BOTTOM	MOTI											
DAIL	5.6.83		ENGINE	ENGINEER IN CHANGE	IIARGE	7	THOMAS	3	á	/ERS: _	EIES	DIVERS: RIEST / SPEER * PER AS BUILTS	Z

LAT. COORD. (N) =
$$21^{2}-22^{2}-47.5^{"}$$
 LONG. COORD. (W) = $157^{2}-54^{2}-23.8^{"}$

SINKER = 1 WT. OF SINKER =
$$60,000 \#$$
 PADEYE SIZE = $2\frac{1}{4}$

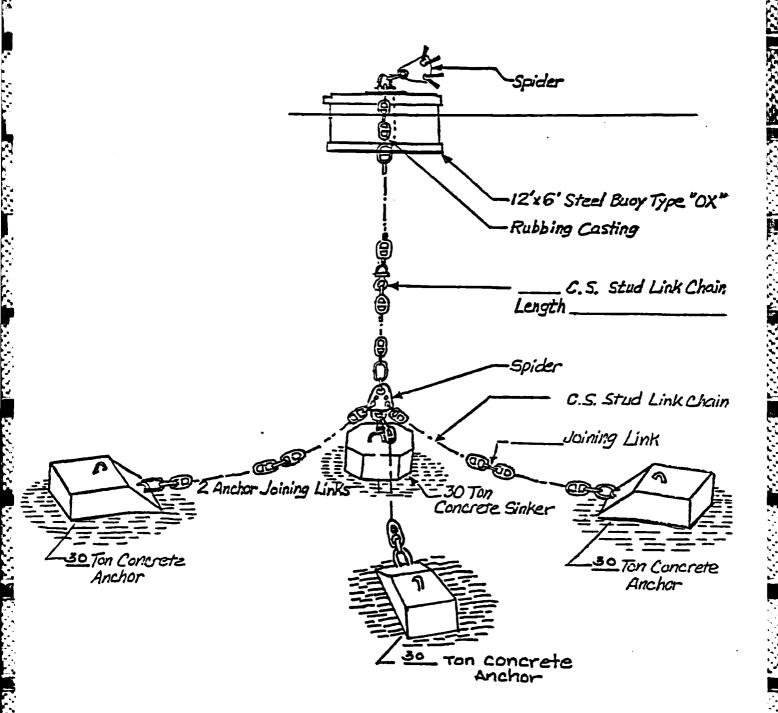
ANCHOR 2 WT =
$$(Co.)$$

ANCHOR 3 WT = $-$

USAGE DURING PAST YEAR = 365 Jays

DATE OF LAST REPAIR/COST =
$$1979/31,280$$

DATE OF LAST OVERHAUL/COST =
$$\frac{9-71}{?}$$



MOORING D10M SCHEMATIC DRAWING

D10S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders, both in good condition. There is about 1 inch of marine growth on the buoy bottom. The rubbing casting and buoy top are in good condition, as is the top jewelry. About half the top is covered with light marine growth, which indicates that the buoy had been pulled over on its side for a period of time. The buoy is now upright.

Riser

The upper portion of the riser chain is covered with about 2 inches of marine growth. A double link measurement near the middle of the riser was less than 80 percent of original wire diameter. The riser enters the bottom at a water depth of 20 feet.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

Not visible for inspection.

Recommendation

A measurement of less than 80 percent of any mooring component is normally cause for a mooring to be removed from service until an overhaul is performed. However, in the case of mooring D10S, the double link measurements of even the most badly worn chain are larger than the 2 1/2-inch double link measurement of the 1 1/4-inch-diameter chain required for an F class mooring. Therefore, the mooring should still be capable of withstanding F class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the F class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING	MOORING NO : D102	_CLASS	SAIF		- 10CA	TION:	77 017	7 .H 77	12 Z	72.4	LOCATION: MID LOCH LAT: 21 22 46 LONG: 157 89 25.9"
WATER DEPTH:	PTH: 20		ANCHOR SIZE/		YPE:4	· 60K	FCON	one ;	Y TYPE:	12,4	IVER 4 SOKE CONC. BUOY TYPE: 12 4 X6 HAWSEPIPE (NOT IN USE)
BOTTOM TYPE:	YPE: SAND	و	O. T.	_	CLAY		CORAL		☐ ROCK	Visibi	Visibility 6' D = depth NI = not inspected, inaccessible
						CON	CONDITION				
<u>0</u>	COMPONENTS	ž	NE E	Ø	SINGLE LINK &	INK %	00	DOUBLE LINK %	X X	a	COMMENT
				2	ĝ	93	Š	98	98	,	,
BUO	BUOY HAHDWARE			7	3	125	101	IRAS	URE	, BU	(UNABLE TO MEASURE, BUTAPPEARS)
SHA	SHACKLE	7			7	7					HAIR OF RIDVILLA PERMISSIE
620	GROUND RING	7									MERGED DECK PLATE & PUR
300	P.S. LINKS	7									CAIL SEVECELY RUSTED BEINED
											GOOD/EIREPZIOSS
	NEAR BUOY		42	77	7		7	7		100	Top EUDGING GENNY OF
ніѕев	MIDDLE			3		7	17		7	2 0	75" 60/NO. 60 CAUGE
	NEAR GRD RG		->	77			777			25,	
CRC	GROUND RING	*	2/4"								ONE LINK AT IO WORLD TO SILLIE
- Cat	UPPER END	7	2%								D/L 2.1."
LEG NO A	MIDDLE	7									
	ENTERS BOTTOM	7									Chund & County 1865 Addings
GROUND	LIPPER END	7									RUEIFO.
LEG NO B	MIDDLE	7									
	ENFERS BOTTOM	7									
0.000	UPPER END	7									
166	MIDDLE	7									
) -	ENTERS BOTTOM	7									
GROUND	UPPER END	7									
NO D	MIDDLE	/									
	ENTERS BOTTOM	7									
DAIL	59.7.5	ENGINE	ENGINELII IN CHAIIGE	IANGE	F	400	THOMAS		/ERS:	ZE15	DIVERS: REIST SPEER LIDER NO. P. 11. T.

MRG ID = DIOS GENERAL LOC = Middle Loch (ISME)

DES CLASS = A (*)

DATE ESTAB = 1946

DEPTH = 27.0 ft. (MLN) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\circ}-46.0^{\circ}$ LONG. COORD. (W) = $157^{\circ}-59^{\circ}-25.9^{\circ}$

BUOY TYPE = Riser-chain W7 hawsepipe

SIZE = 12/0×6/hi

FENDER = Rubber FIBERGLASS COATING = YES

CHAIN SIZE = 23/4

SINKER = | WT. OF SINKER = GO,000 #

PADEYE SIZE = 2/4 4

OF ANCHORS = 4

60,000 # ANCHOR 1 WT =

ANCHOR 2 WT = (170.)

ANCHOR 3 WT = 1 ANCHOR 4 WT =

PADEYE SIZE = PADEYE SIZE =

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = YEND/YENB/YR/YO

DATE OF LAST REPAIR/COST = 1977/ # 3,275

DATE OF LAST OVERHAUL/COST = 9-71/?

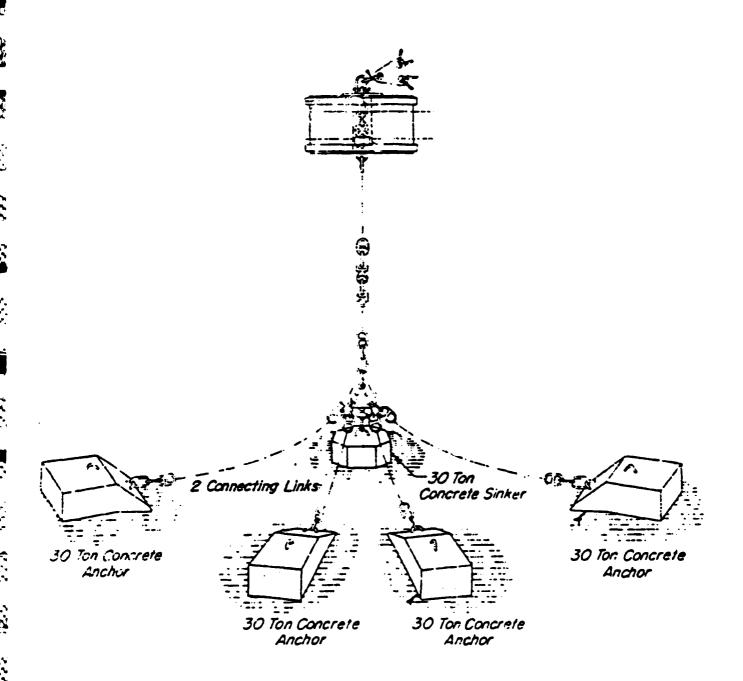
DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = (986

NEXT SCHED. OVERHAUL = 1983

DATE SHEET COMPILED = 8-82/MS

(1=) Down-graded to dess F after 1979 U/W Insp.



MOORING D10S SCHEMATIC DRAWING

D11N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders. The buoy is listing about 90 degrees, and its top jewelry is in the water. From what can be seen of the exterior, the buoy appears to be in satisfactory condition. Even though three yardcraft were tied up to this mooring during the inspection, the excessive list could indicate that the buoy's watertight integrity has been ruptured.

Riser

The riser measured between 80 and 90 percent of its original wire diameter in most areas. The riser enters the bottom at a 20-foot water depth.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

Not visible for inspection.

Recommendations

- o A measurement between 80 and 90 percent of any mooring component is normally cause for a mooring to be downgraded to the next lower mooring classification. However, in the case of Mooring DllN, the double link measurements of even the most badly worn chain are larger than the 4-inch double link measurement of the 2-inch-diameter chain required for a D class mooring. Therefore, the mooring should still be capable of withstanding D class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the D class load limits as defined in NAVFACENGCOM Design Manual DM-26.
- o Due to the extreme list of the buoy, recommend that use of this buoy be restricted until after the buoy has been recovered, the cause of its list determined, necessary repairs completed, and the buoy reinstalled.

MOORING NO.:	20 CO CO	CLASS:	D	4	LOCAT	NOI: K	व वा	Y1 H5	T:21%	252	LOCATION: MID LOCH LAT: 21,22 52,2 LONG: 157 59 24.2
WA IER DEPTH:	TH: 20'		ANCHOR S	SIZE/T	YPE: 4	-60k	2# CON	1 <u>6.</u> 8003	(TYPE: [7,0	ANCHOR SIZE/TYPE: 4-60K# CONC. BUOY TYPE: 12/0 X 6' HAWSEPIPE (IN USE)
BOTTOM TYPE:	rPE: [] SAND		ON A	_	CLAY		CORAL		Пвоск	Visibility_	Ility 6 D = depth NI = not inspected, inaccessible
	-			,		CONU	CONDITION				
CO	COMPONENTS	ž	NEW	Š	SINGLE LINK &	NK %	DOL	DOUBLE LINK %	X X	0	COMMENT
				•06	•08	-08	106	98	98		
80O)	BUOY HARDWARE										BUON HAS 90° LIST
SHACKLE	KLE	7									TOP JEWELRY IN WATER
SROUN	GROUND RING	7									FIBEIZGLASS \$ TOP PLATE GOOD
(No VIS	(NO VISIBLE WEAR										PUBBER FENDER NOTACT
	•	İ									
	NEAR BUOY		23°	77			77				
RISER	MIDDLE							13			23. 60/No. 60 GAUGE-
	NEAR GRD RG		→					77			
CRC	GHOUND RING	7	*24								CLUMP & GROUND LEGS
9	LIPPER END	7	2%								NOT UTSIBLE
166	MIDDLE	7									
	ENTERS BOTTOM	7									
GHUNIND	UPPER END	7									
166 166	MIDDLE	7									
	ENTERS BOTTOM	7									
	UPPER END	7									
	MIDDLE	7									
	ENTERS BOTTOM	7									
Common	UPPER END	7									
166	MIDDLE	7									•
	ENTERS BOTTOM	7			٠						
DATE	5.6.83	ENGIN	ENGINEER IN CITARGE:	HARGE		20	THOMAS		VERS:	2615	DIVERS: REIST / SPEER XATO POINTS

MRG ID = DIIN GENERAL LOC = Middle Loch (ISMF) DES CLASS = A (*)

DATE ESTAB = 1946

DEPTH = 23.0 ft. (MLN) BOTTOM = Mud

LAT. COORD. (N) = $21^{-2}2^{-52.2}$ LONG. COORD. (W) = $157^{-59}-24.2^{-1}$

BUOY TYPE = Riser-chain 17 hawsepipe SIZE = 126 x 6 hi

FENDER = Rubber FIBERGLASS COATING = YES

CHAIN SIZE = 234"

SINKER = 1 WT. OF SINKER = 60,000 # PADEYE SIZE = 2/4-

OF ANCHORS = 4

ANCHOR 1 WT = 60,000 #

ANCHOR 2 WT = (De_i)

ANCHOR 3 WT = 7 ANCHOR 4 WT =

PADEYE SIZE =

PADEYE SIZE = 1

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = YROH/YROH

DATE OF LAST REPAIR/COST = 1979 / \$1,750

DATE OF LAST OVERHAUL/COST = 5-70 /?

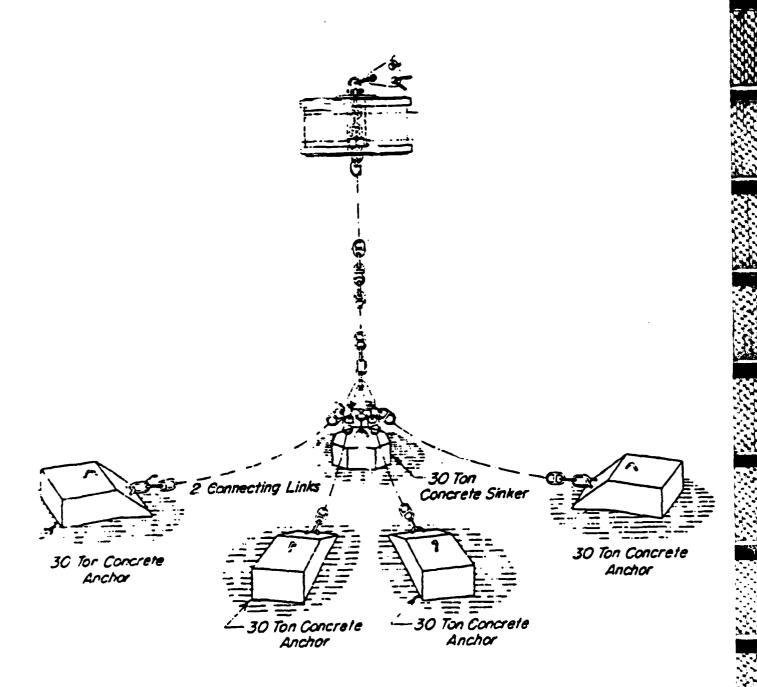
DATE OF LAST UNDERWATER INSPECTION = 1979 CONDUCTED BY = GHESDIV (UCT TWO)

NEXT SCHED. REPAIR = 1988

NEXT SCHED. OVERHAUL = 1985

DATE SHEET COMPILED = 8-82/MS

(+) Down-graded to class D after 1979 u/w Insp.



MOORING D11N SCHEMATIC DRAWING

D11M

Buoy

This buoy is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawse-pipe. The rubbing casting within the hawsepipe is broken. The buoy has a painted surface (no fiberglass) and shows some light rusting around the side and top. It has two wooden fenders which are partially broken and in need of repair. The 2-inch galvanized pipe chafing rail is covered with light rust. A 2 3/4-inch detachable link in the top jewelry has its diameter worn to within 80 and 90 percent of the original wire size.

Riser

The Second Secon

The riser measured to be above 90 percent of original diameter in all areas. The riser enters the bottom at a depth of 23 feet.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

Not visible for inspection.

Recommendations

The worn detachable link in the top jewelry should be replaced. In addition, the rubbing casting is broken and the buoy is rusted and has broken fenders. The buoy needs to be refurbished. Otherwise this mooring is in satisfactory condition for continued use as a class D mooring.

MOOHING NO.	O: DIIM	CLASS:_	A/P	4	LOCAT	ION: M	वा वा	V1 775	1:21.2	2 20	LOCATION: MID, LOCH LAT: 21 22 50.7 LONG: 157 59 28.4
WATER DEPTH:	II. 23,		ANCHOR	SIZE/TY	<u>بَ</u>	60K#	KODY	£ BUOY	TYPE:	2,4 x	ANCHOR SIZE/TYPE: 3-60K# CONC. BUOY TYPE: 12' X 6 HALLSEPIPE. (IN USE.)
BOTTOM TYPE:	PE: SAND		ON H	į	CLAY	į	CORAL		ROCK	Visibility	lity D = depth NI = not inspected, inaccessible
						CONDITION	ITION				
COM	COMPONENTS	ž	NEW	SIR	SINGLE LINK &	NK %	000	DOOREE LINK &	×	a	COMMENT
				96	108	-08	+06	90	-08		
BUOY	BUOY HARDWARE									٠	NO FIBERCLASS
DETAC	DETACH. LINK		2%.	•	7						LIGHT RUSTON ABOVE-WATER
GROUL	GROUND RING		<u>4</u>	7							PORTIONS OF BUDY
DETACH.	DETACH. LINK/SHACK	Ħ									RUBBING CASTING BROKEN
SHACKLE	SHACKLE/E. LINK/SHACK										
	NEAR BUOY		2 3/4	77			77			407	
RISER	MIDDLE		_	32			3			10,	23/4"60/NO.60 GAUGE
	NEAR GRD RG		-	1/2			3			23	
ONS.	GROUMD RIMG.	NAX	24"								CLUMP & GROUND LEGS
G G G	UPPER END	7	22.								NOT VISIBLE
1 E G	MIDDLE	>	-								
NEC. A.	ENTERS BOTTOM	7									
CHOUNT	UPPER END	7									
LEG NO H	MIDDLE	7									
	ENTERS BOTTOM	7									
Green	UPPER END	7									
LEG NO	MIDDLE	7									
	ENTERS BOTTOM	7									
CECUMO	UPPER END										
1 E G	MIDDI E										
	ENIERS BOTTOM										
DAIR	5.6.83	ENGIN	ENGINEER IN CHARGE:	HARGE	-	THOMAS	35	NO -	DIVERS: KRUSE	KEV	SE TORRENS *PERAS-BUILTS

MRG ID = DIIM GENERAL LOC = Middle Loch (ISMF) DES CLASS = A(*)

DATE ESTAB = 1950 DEPTH = 27.0 ft. (MLN) BOTTOM = Mud

LAT. COORD. (N) = 21.22-50.7 LONG. COORD. (W) = 157-59-26.2

BUOY TYPE = Riser-chain wy hawsepipe SIZE = 12/4×6/hi

FENDER = RUBBET FIBERGLASS COATING = HES ALE

CHAIN SIZE = 23/4"

SINKER = $\frac{1}{246}$ WT. OF SINKER = $\frac{60,000 \pm 246}{46}$

OF ANCHORS = 3

ANCHOR 4 WT =

ANCHOR 1 WT = 60,000 # ANCHOR 2 WT = (Do.)

ANCHOR 3 WT = (Do.)

PADEYE SIZE = (Do.)
PADEYE SIZE = (Co.)
PADEYE SIZE = (Co.)

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = YROH/YROH

DATE OF LAST REPAIR/COST = 1977/\$4,850

DATE OF LAST OVERHAUL/COST = 5-70/?

DATE OF LAST UNDERWATER INSPECTION = 1979

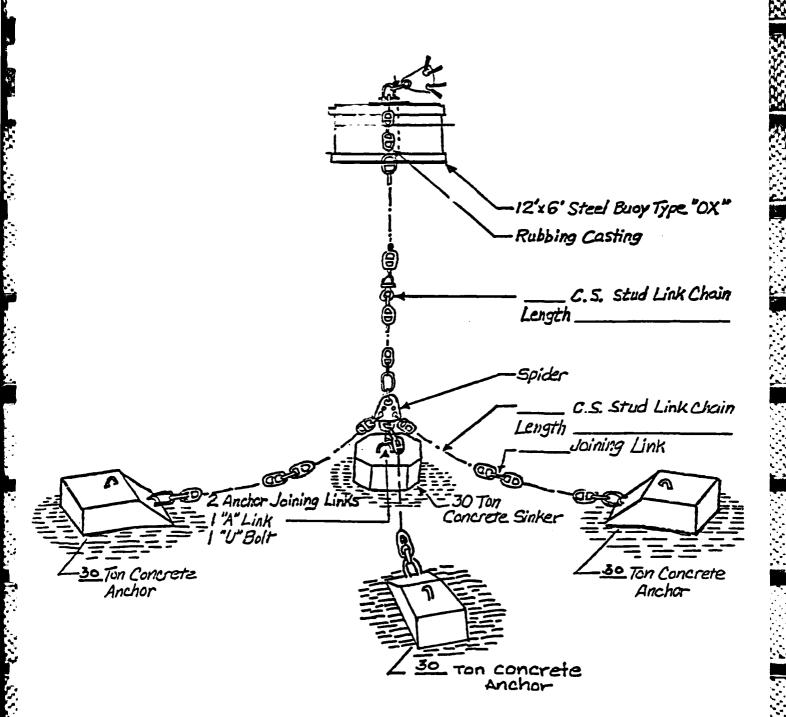
CONDUCTED BY = CHESDIV (4CT Two)

NEXT SCHED. REPAIR = 1988

NEXT SCHED. OVERHAUL = 1985

DATE SHEET COMPILED = 6-82/M3

(#) Down-graded to class D after 1979 U/W Insp.



MOORING D11M SCHEMATIC DRAWING

INSPECTION REPORT

D11S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a tension bar. The buoy is fiberglass coated and has two rubber fenders, both in good condition. A wooden chafing rail is broken and part of it has been carried away.

Riser

Although measurements near the center and upper end of the riser chain were greater than 90 percent, the measurements dropped to between 80 and 90 percent near the mudline. The riser has a swivel near the mudline and enters the bottom 20 feet below the surface.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

Not visible for inspection.

Recommendation

A measurement between 80 and 90 percent of any mooring component is normally cause for the mooring to be downgraded to the next lower classification. However, in the case of Mooring D11S, the double link measurements of even the most badly worn chain are larger than the 4-inch double link measurement of the 1-inch-diameter chain required for a D class mooring. Therefore, the mooring should still be capable of withstanding D class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the D class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING NO::- WATER DEPTH: BOTTOM TYPE: Visibility 6	-	20' 20' 	dep	S: ALL ANCHOR: [L]-MUD th	SIZE/T	VPE:4-6 CLAY NI = not	ION: IX KOK# □	LOCATION: MID, LOCH L. PE: 4 KOK# CONC. BUO CLAY CORAL [N] = not inspected, inaccessible	CH LA: L BUOY	LAT: 212 JOY TYPE: J BROCK	2,4	S: A/D LOCATION: MID, LOCH LAT: 21, 22, 49, 21, ONG: 157° 59'28.4" ANCHOR SIZE/TYPE: 4.KOK# CONC. BUOY TYPE: 12, 4 × 6" WI, TENSION BAR [D-MUD
							COND	CONDITION				
CON	COMPONENTS	LS	ž	NEW	S S	SINGLE LINK %	% XX	nod	DOUBLE LINK %	* 6	٥	COMMENT
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \					\$		\$	\$		\$		'
PADEVE (ON	BUCK HANDWANE	ARE 50			7							KUBBEK FENDERS: 600D
TENSION BAR	N BA	k)	*	いた。								WOOD RUB EALL PARTIALLY BROKEN
3 P.S. LINKS	110	אַ	7									AWAY. PADEYE WORN TO ST. FROM
SHACKLE	KLE		7									LARGEST MEASURED \$ OF 5 12" *
	NEAR BUOY	BUOY		23	177			1/2			70P	
RISER	MIDDLE	E		_	73			3			<u>o</u>	23" 60/NO-60 GAVGE
	NEAR (NEAR GRD RG		->	72				1/2		20,	SWIVEL AT BOTTOM OF RISER
GRO	GROUND RING	NG		₩ \ \								CLUMP\$ GROUND LEGS/ANCHORS
	UPPER END	END	7									BURIED
LEG	MIDDLE	u u	7		_							
MC. A	ENTER	ENTERS BOTTOM	7									
GROUND	UPPER END	END	7									
LEG	MIDDLE	E	7									
	ENTER	ENTERS BOTTOM	7									•
341.000	UPPER END	END	7									
LEG	MIDDLE	E	7									
2	ENTER	ENTERS BOTTOM	7									
- Granda	UPPER END	END	7									
LEG	MIDDLE	E	7									
Q. O	ENTER	ENTERS BOTTOM	7									
,	6.6.83	X				}	T. Low	,			70.7	

MRG ID = DIIS GENERAL LOC = Middle Loch (ISMF)

DES CLASS = A(+)

DATE ESTAB = 1946

DEPTH = 27.0 ft. (MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{4}-22^{4}-49.2^{"}$ LONG. COORD. (W) = $157^{4}-28.4^{"}$

BUOY TYPE = Riser-chain wy

SIZE = 12 px 6 hi

FENDER = Rubber (top & Side) FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4

SINKER = 1 WT. OF SINKER = GO,000 # PADEYE SIZE = 2/4 P

OF ANCHORS = 4

ANCHOR 1 WT = 60,000 #_ ANCHOR 2 WT = T

ANCHOR 3 WT = $^{-}$ ANCHOR 4 WT = $^{-}$ PADEYE SIZE =

PADEYE SIZE = ~

USAGE DURING PAST YEAR = 0 days TYPE OF SHIPS MOORED = ?

DATE OF LAST REPAIR/COST = (977/43,275)

DATE OF LAST OVERHAUL/COST = 4-68/?

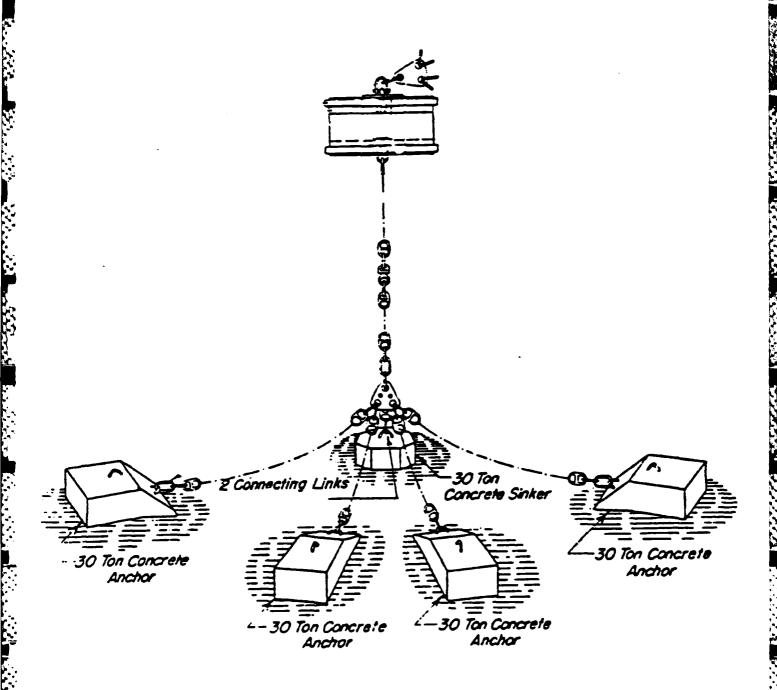
DATE OF LAST UNDERWATER INSPECTION = 1979
CONDUCTED BY = CHESDIV (4CT Two)

NEXT SCHED. REPAIR = 1988

NEXT SCHED. OVERHAUL = 1985

DATE SHEET COMPILED = 8-82/MS

(A) pown-graded to class D after 1979 U/W Insp.



MOORING D11S SCHEMATIC DRAWING

INSPECTION REPORT

D12N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. It has a fiberglass coating and two rubber fenders in good condition. The top metal plate is badly rusted and the galvanized pipe chafing rail has rusted away. The buoy lists about 60 degrees which may be caused by a loss of its watertight integrity. As the chain comes out of the top of the hawsepipe, the top link is badly worn (about 75 percent of its original wire diameter).

Riser

All double link measurements of the riser chain were greater than 90 percent of the chain's original wire size. The riser enters the bottom at 20-foot water depth.

Ground Ring

The ground ring was located partially buried in the mud and close to the lower portion of the riser chain.

Ground Legs

ACCOUNT OF THE BOARD STATE OF THE STATE OF T

The top few links of two ground legs were visible and entered the bottom on bearings of $095^{\circ}M$ and $330^{\circ}M$ from the ground ring. Measurements taken at the top of the two legs showed the legs to be greater than 90 percent of their original wire sizes. The other two ground legs were not visible.

Anchors/Concrete Sinker

Not visible for inspection.

Recommendations

- o The buoy should be recovered and the cause of its list determined and repaired. The top plate and chafing rail should be refurbished or replaced as required. At the same time the buoy is recovered, the worn top link of the riser chain should be removed. The use of this mooring should be restricted until buoy repairs are completed.
- o Other than the buoy refurbishment noted above, the mooring is in satisfactory condition for continued use as a class F mooring.

ADORING NO.:	0: DIZN	_CLASS:_	AF	İ	LOCAT	NON:	श्री	CH LA	17.	SS 2.	LOCATION: MID, LOCH LAT: ZI ZZ SS-\$LONG: 157 59 26.5	
VATER DEPTH:	m: 20'		ANCHOR SIZE/T	SIZE/TY	PE:4-	60K#	CON	BUOY	TYPE:	747	YPE: 4-60K# CONC. BUOY TYPE: 124 X6 HAWSEPIPE (IN USE)	SE)
OTTOM TYPE:	PE: SAND	Q	D MUD	_] clay		CORAL		ROCK	Visibi	Visibility (2' D = depth NI = not in	NI = not inspected, inaccessible
						COND	CONDITION					
100	COMPONENTS	ž	NEW	SIN	NGLE LINK %	VK %	noa	DOUBLE LINK %	K %	O	COMMENT	
				+06	₩	-08	+06	90+	-08			:
BUOY	BUOY HARDWARE										DECK PLATE EADLY RUSTED	S(&1)
JOIN	JOIDING LINK	7									RUBBER FENDER - GOOD	Ą
SHACKLE	北丘	7									FIRGRELASS: GOOD	
4.6R	GROUND RING	7									RUB RAIL PARTLY RUSTED AWAY	ED AWAY
(NO VISI	(NO VKIBLE WEAR)										TOP LINK OF CHAIN GROOUSED TO < 15	WED TO < 75
	NEAR BUOY		2%"	7,			4				BUDY HAS LIST OF AROUT 60°	WT 60°
RISER	MIDDLE			77			77					
	NEAR GRD RG			77			77				23" 60/NO. 60 GAUGE	, E
3H3	CHOUND BING			7			7				CLUMP HAIRPIN ABOVE BOTTOM	S BOTTOM
ON NOOS	UPPER END			7			1		·		KINO SUBJECT OF STATE ONLY	THE OULY
LEG MO	MIDDLE	7									TWO GROUND LEG CONNECTIONS.	ECTIONS.
	ENTERS BOTTOM	[[BOTH ENTER BOTTOM ATONCE	TONCE
GROWIND	UPPER END			7			7				ONE @ OGS MAC. /ONE @	350° MAG.
I EG	MIDDLE	7	i									
	ENTERS BOTTOM	7										
	UPPER END	7										
LEG	MIDDLE	7										
2	ENTERS BOTTOM	7										
	UPPER END	1										
LEG PS C	MIDDI E	7										
	ENTERS BOTTOM	1	,									
DATE	5.6.83 ENGINEER IN CHARGE: THOMAS	ENGIN	EER IN C	HARGE	F	3	AS	Ma	/ERS:	120	DIVERS. KRUSE/TORRENS	

%

MRG ID = DIZN GENERAL LOC = Middle Loch (ISMF) DES CLASS = A(4)

DATE ESTAB = MAG DEPTH = 24.0 ft.(MLW) BOTTOM = MAG

LAT. COORD. (N) = 21-22-55.3 LONG. COORD. (W) = 157-59-26.8

BUOY TYPE = Riser-chain 7 hawsepipe SIZE = 12 + x6 hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4"

SINKER = 1 WT. OF SINKER = 60,000# PADEYE SIZE = 21/4 6

OF ANCHORS = 4

ANCHOR 1 WT = $\frac{60,000 \#}{\text{ANCHOR 2 WT}}$ PADEYE SIZE = $\frac{21}{100}$ ANCHOR 3 WT = $\frac{(D_0)}{100}$ PADEYE SIZE = $\frac{1}{100}$

ANCHOR 3 WT = (Co_1) PADEYE SIZE = (Co_2) ANCHOR 4 WT = (Co_2) PADEYE SIZE = (Co_3)

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = YTM/YTM/YFR/YF

DATE OF LAST REPAIR/COST = 1977/42,750

DATE OF LAST OVERHAUL/COST = 2-74/ ?

DATE OF LAST UNDERWATER INSPECTION = 1979

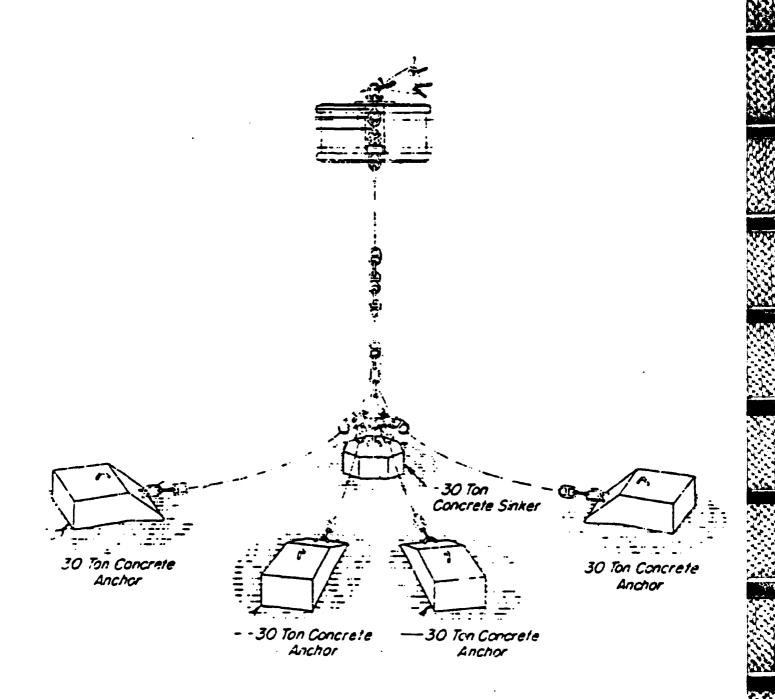
CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = 1987

NEXT SCHED. OVERHAUL = 1984

DATE SHEET COMPILED = 5-82/MS

(*) Down-graded to dass = after 1979 U/W Insp.



MOORING D12N SCHEMATIC DRAWING

INSPECTION REPORT

D12M

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has rubber fenders in good condition. The top metal plate and galvanized pipe chafing rail are about 50 percent rusted away and the top jewelry is lightly rusted. The top chain link is worn to less than 80 percent of its original wire diameter. The rubbing casting is in good condition.

Riser

The riser chain measured between 80 and 90 percent along its exposed length. The riser enters the bottom near the ground ring at a depth of 20 feet.

Ground Legs

The top links of two ground legs were visible. The two legs enter the bottom near an almost completely buried concrete sinker. The third leg was not visible.

Anchors

Not visible for inspection.

Recommendation

The buoy needs to be refurbished and the worn top riser chain link removed. Otherwise, the mooring is in satisfactory condition for continued use as a class F mooring.

MOOHING NO.:	WZIQ OF		LASS	CLASS: A F	П	201	ATION	AM	100	HIAI	772	2 53	LOCATION: MID, LOCH LAT: 21-22 53.8 LONG: 157 59 28.9
WATER DEPTH:	TII: 24	,	«	NCHOR	SIZE/I	rype:	2.60	7000	ONC	BUOY	TYPE: 1	2 4X	ANCHOR SIZE/TYPE: 2. 6000 CONC BUOY TYPE: 12 4 K 6 HAWSEPIPE (IN USE)
BOTTOM TYPE:		SAND		OOW Z		CLAY	¥	CORAL	RAL		Пвоск	Visibility_	lity 6 to depth NI = not inspected, inaccessible
							00	CONDITION	NC				
TOO .	COMPONENTS	-	ž	NEW	<i>S</i>	SINGLE	NGLE LINK %		BOOD	DOUBLE LINK %	×	D	COMMENT
					90	108	-080		+06	÷ Q	-08		
BUO	BUOY HARDWARE												BUN TOPCK PLATE & RUB RAIL
SHACKLE	21Z		7										50% EUSTED AWAY.
SHACKLE	ヨフス		7										TOP LINK OF CHAIN WORN TO <80%
SPIPER	7,		7										AT SHACKLE.
とり門	3 DETROH. LINKS	27.	7			 		_					NO VISIBLE WEAR ON TOP HAIZOWARE
	NEAR BUOY	>		24°	77			7	7	3		10P	23" CO/NO. CO GAUGE
RISER	MIDDI E					132	Z		_	3		10,	
	MEAR GRD RG	P.G				32	Z		٠	7		20,	
289	GROUND RING		7										
	UPPER END		7										TWO LEGS EUTER BOTTOM
CECOUND FEGURE	MIDDLE		7										AT CLUMP
	ENTERS BOTTOM	TTOM	7										
GW 7005	UPPER END		7			i							
1 E G	MIDDLE		7										
	ENTERS BOTTOM	TTOM	7										
	LIPPER END												
166	MIDDLE								•				
	ENTERS BOTTOM	MOLL											
COUNTRY	UPPER END												
LEG PEG PEG PEG PEG PEG PEG PEG PEG PEG P	MIDDLE					_	_	_	7				
	ENTERS BOTTOM	MOTTO						•					
0.416	5.6.83		EMCHA	E 6. 42 181 7		<u>بر</u>	THOMAS	MA		Ž	Enc. 1	70.	PRINCE YOURE TORPENS

MRG ID = DIZM GENERAL LOC = Middle Loch (ZSMF) DES CLASS = A (+)

DATE ESTAB = 1950 DEPTH = 26.0 ft. (MLW) BOTTOM = MIND

LAT. COORD. (N) = $\frac{21-22-53.8}{}$ LONG. COORD. (W) = $\frac{157-59-28.9}{}$

BUOY TYPE = Riser-chain of howse pipe SIZE = 12 0 x 6 hi

FENDER = Rubber FIBERGLASS COATING = YES

CHAIN SIZE = 23/4

SINKER = 1 WT. OF SINKER = GO, COO # PADEYE SIZE = 2/4 +

OF ANCHORS = 2

ANCHOR 1 WT = 60,000 # ANCHOR 2 WT = T

ANCHOR 3 WT = 1 ANCHOR 4 WT = $^{-}$

PADEYE SIZE = PADEYE SIZE =

USAGE DURING PAST YEAR = 365 days

TYPE OF SHIPS MOORED = YTM/YTM/YFR/7F

DATE OF LAST REPAIR/COST = /477/ +3,275

DATE OF LAST OVERHAUL/COST = 2-74/?

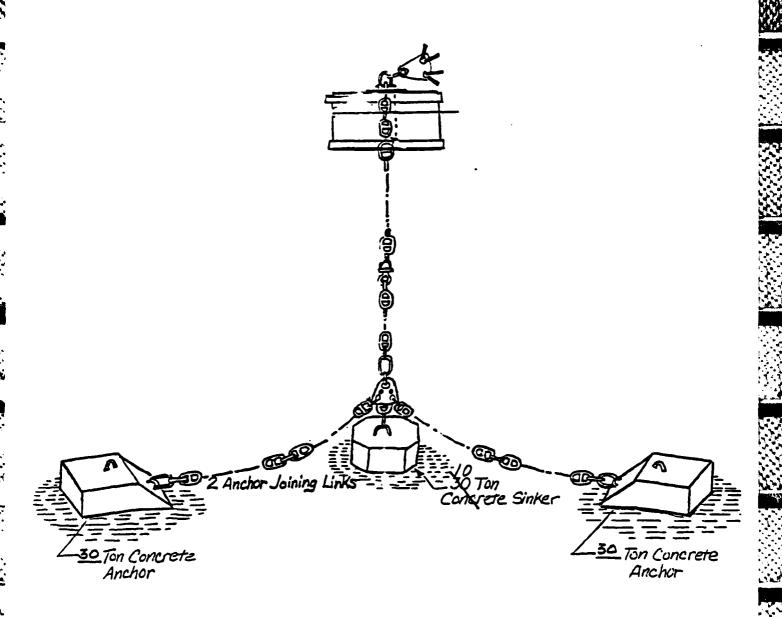
DATE OF LAST UNDERWATER INSPECTION = 1979
CONDUCTED BY = CHESDIV (UCT Two)

NEXT SCHED. REPAIR = 1987

NEXT SCHED. OVERHAUL = 1984-

DATE SHEET COMPILED = 6-82/MS

(*) Down-graded to class E after 1979 U/W Insp.



INSPECTION REPORTS

D12S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders. Sections of the fenders are missing. The bottom is covered with about 1 inch of marine growth. The top metal plate, the galvanized pipe chafing rail, and the top hardware are all in good condition. The rubbing casting is in fair condition.

Riser

Except for the upper portion of the riser chain, which is in good condition, the remainder measures between 80 and 90 percent of original wire diameter. The riser enters the bottom at a depth of 20 feet.

Ground Legs/Anchors/Concrete Sinkers

Not visible for inspection.

Recommendation

A measurement between 80 and 90 percent of any mooring component is normally cause for the mooring to be downgraded to the next lower classification. However, in the case of Mooring D12S, the double link measurements of even the most badly worn chain are larger than the 2 1/2-inch double link measurement of the 1 1/4-inch diameter chain required for an F class mooring. Therefore, the mooring should still be capable of withstanding F class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the F class load limits as defined in NAVFACENGCOM Design Manual DM-26.

DOHING NO:	0: D125		CLASS: A	3/E		LOCAT	ON: M	न'वा	17. TO	12.I	72.57	LOCATION: MID, LOCH, LAT: 21,22,57.3 Lonis: 157,59,21"
АТЕЯ ВЕРТИ:	m: 20		- ANCI	ANCHOR SIZE/T	ZE/TY	PE: 4	60K3	F CON	C BUO	/ TYPE:	20	YPE: 4 60K# CONC. BUOY TYPE: 12 \$ X 6 HAMSEPIPE (IN USE)
OTTOM TYPE		SAND	Ē	MUD H		CLAY		CORAL		ROCK	Visibil	Visibility (2 D = depth NI = not inspected, inaccessible
							CONDITION	ITION		l.		
COM	COMPONENTS		Z	NEW	SIN	NGLE LINK %	* X	00	DOUBLE LINK %	* X	a	COMMENT
			-		÷06	8 0	-08	÷	90	-08		
BUOY	BUOY HARDWARE		_									FIBERGLASS & DECK PLATE
												10 6000 CODD. SECTIONS OF
DETAC	DETACH, LINK	_	7									EUBBER FENDER MISSING
	•											BOTTOM FIBERGLASS GOOD
JOVISIE	NOVISIBLE WEAR	ح) (۲										RUSERING CASTING OK
	NEAR BUOY		23		77						10P	
RISER	MIDDLE		_	_	77		-	7	7		<u>اح</u>	23" GO/NO-GO GAUSE
	NEAR GRD RG	(m)	>			77			7		20	
GRO	GROUND RING		Z	NIA								CLUMP NOT VISIBLE
01411000	UPPER END		7 2	2亿								GROUND LEGS & ANCHORS BURIED
LEG NO A	MIDDLE	-	7	-								
	ENTERS BOTTOM		7									
GROUND	UPPER END	_	7					•				
LEG NO H	MIDDLE	•	\									
	ENTERS BOTTOM	OM	7									
	UPPER END	_	7									
LEG Second	MIDDLE		7				,					
	ENTERS BOTTOM	WO	7				,					
	UPPER END	_	7			-						
L EG	MIDDI E											
	ENTERCHOTTO	-	_									

DIVERS: KRUSE/TORRENS

ENGINEER IN CITABLE: THOMAS

5.6.83

MRG ID = DIZS GENERAL LOC = Middle Loch (ZSMF) DES CLASS = A(#)

DATE ESTAB = 1946 DEPTH = 28.0 ft./mlw) BOTTOM = Mud

LAT. COORD. (N) = $\frac{2l-22-52.3}{}$ LONG. COORD. (W) = $\frac{157-59-31.0}{}$

BUOY TYPE = Riser-chain w7 hawsepipe SIZE = 120x6'hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4

SINKER = $\frac{1}{2/4}$ WT. OF SINKER = $\frac{60,000}{4}$ PADEYE SIZE = $\frac{2/4}{4}$

OF ANCHORS = 4

ANCHOR 1 WT = GO,000 #F

PADEYE SIZE = 2/4 PADEYE SIZE = PADEYE SIZE = ANCHOR 3 WT =

ANCHOR 4 WT = -PADEYE SIZE =

USAGE DURING PAST YEAR = D days

TYPE OF SHIPS MOORED = ?

DATE OF LAST REPAIR/COST = 1977/\$3,275

DATE OF LAST OVERHAUL/COST = $\frac{9-71}{?}$

DATE OF LAST UNDERWATER INSPECTION = 1979

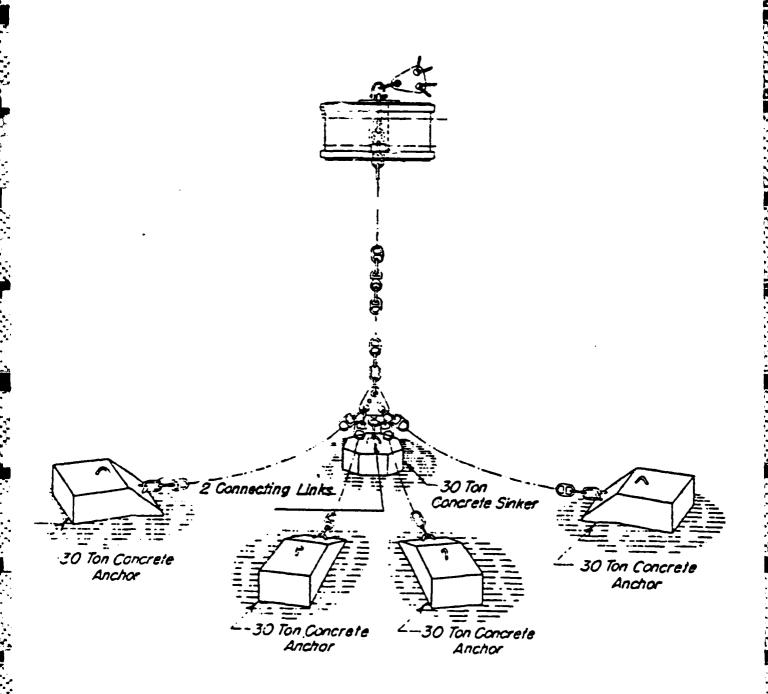
CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = 1987

NEXT SCHED. OVERHAUL = 1984-

DATE SHEET COMPILED = 8-8-/MS

(#) paon-graded to class E after 1979 U/N Insp.



MOORING D12S SCHEMATIC DRAWING

INSPECTION RESULTS

DP1N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in March 1982, and the buoy is in good condition. The top jewelry wire diameter measurements were all greater than 90 percent of their original diameter size. There is some light rust on the top hardware and 2 inches of marine growth on the buoy's bottom.

Riser

The riser chain and accessories were replaced during the 1982 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enters the bottom at a water depth of 40 feet.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

Not visible for inspection.

Recommendation

This mooring is in satisfactory condition for continued use as a class $\mbox{\bf A}$ mooring.

MOORING	MOORING NO : DPIN	- 1	_CLASS:_	Ą		LOCA	TON:	20 00	지 V	1.21.	21,22	LOCATION: DR EAC LAT: 2122/12" LONG: 157°58' 23.6"	
WATER DEPTH:		40,		NCHOR	SIZE/T	YPE: 4	-60K	* CON	£.BUOY	TYPE:	12,4)	ANCHOR SIZE/TYPE: 4-60K# COUC. BUOY TYPE: 12 4 X6 HANDEPIPE	
BOTTOM TYPE:		SAND		E MUD	_	CLAY	□	CORAL		ROCK	•	(INTERMITTENT (JSE)	
Visibility		0	D = depth	_		Z	oot inspe	a not inspected, inaccessible	sessible			j	
							CON	CONDITION					
CO	COMPONENTS		ž	NEW	S	SINGLE LINK %	NK &	noa	DOUBLE LINK %	* ×	D	COMMENT	
	•				ġ	8	8	8	\$.	98			
BUO	BUOY HARDWARE	Ē										OVERHAULED 3-82	
SHAC	SHACKLE		7									FIBERGLASS, DECK PLATE, RUB	
GROU	GROUND BING	NG	7			·						RAIL, FENDERS: OK	
CHAIN	CHAIN CLAMP	J	*									MODERATE RUST ON HARDWARE	_
											*	CHAIN CLAMP CRACKED AT BOLT HOLES.	ű
	NEAR BUOY	١٧		234"	77						700		
RISER	MIDDLE	·		_	7,						20.	27" 60/NO-60 GAUGE	
	NEAR GRD RG) RG		→	77						40'		
GRC	GROUND RING			٧/٧								ANCHORS & GROWND LEGS NOT	
	UPPER END)	7									VISIBLE	
LEG	MIDDLE		7										
Ž.	ENTERS BOTTOM	TTOM	7										
ON TOO	UPPER END	_	7										
LEG NO B	MIDDLE		7										
	ENTERS BOTTOM	TTOM	7										
OMITOGO	UPPER END		7										
LEG	MIDDLE		7										
	ENTERS BOTTOM	MOTTO	7		,								
CMICOS	UPPER END		7										
LEG NO	MIDDLE		7										
	ENTERS BOTTOM	TTOM	2										
DATE:	5.11.83		ENGINI	ENGINEER-IN-CHARGE:	HARGE	ΙП	THOMAS	IAS	á	/ERS:	£15A	DIVERS: ELSASSER/SUTTON	

MRG ID = DP1N

GENERAL LOC = Deperming Fac.

DES CLASS = A(*)

DATE ESTAB = 1942

DEPTH = 40.0 ft./MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\prime}-12.0^{\circ}$ LONG. COORD. (W) = $157^{\circ}-58^{\prime}-33.6^{\circ}$

BUOY TYPE = Riser-chain Ny hawsepipe

SIZE = 12'0x6'hi

FENDER = Rubber

FIBERGLASS COATING = YES

CHAIN SIZE = 234

SINKER = $\frac{1}{4}$ WT. OF SINKER = $\frac{60,000}{4}$ PADEYE SIZE = $\frac{2\sqrt{4}}{4}$

OF ANCHORS = 4

ANCHOR 1 WT = ANCHOR 2 WT = 60,000 # (00.)

(Po.) ANCHOR 3 WT =

ANCHOR 4 WT = 1

PADEYE SIZE = (De.)

PADEYE SIZE = (De.)

USAGE DURING PAST YEAR = 10 days

TYPE OF SHIPS MOORED = LHA/CC/CV

DATE OF LAST REPAIR/COST = 1977 / \$3,000

DATE OF LAST OVERHAUL/COST = 3-82/ Installation cost = \$22,000 (+4)

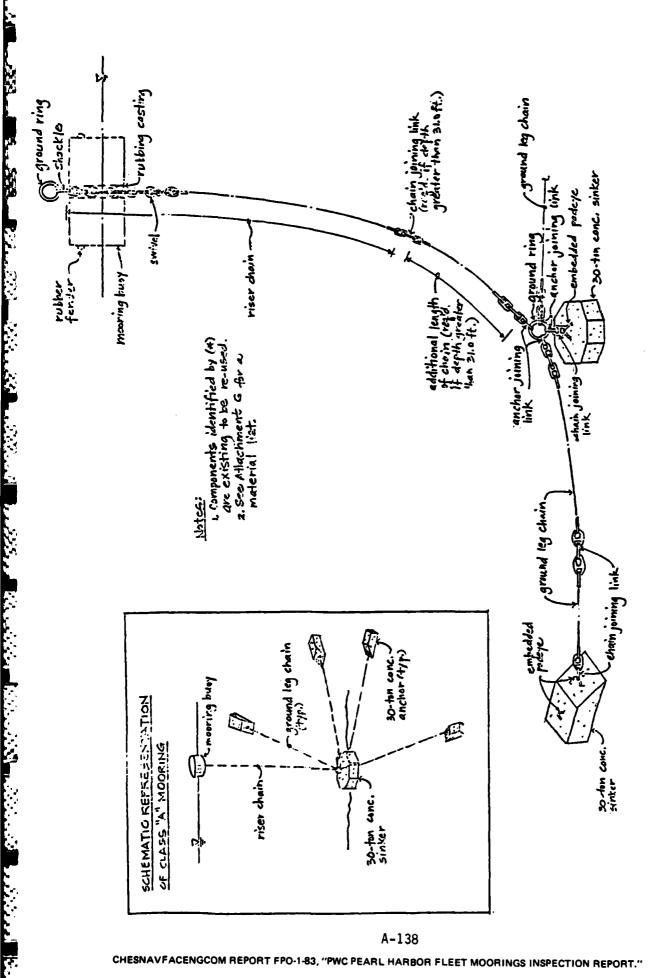
DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY =

NEXT SCHED. REPAIR = 1985

NEXT SCHED. OVERHAUL = 1987

DATE SHEET COMPILED = 6-82/MS

- (+) Mooring was class C prior to 3/82; was relocated from DIN 4/81
- (+*) PWC J.O. 190-6626, completed 3/82; PHNS' floating crane and diver services & PWC shop forces; super URGENT accomplishment for LHA deperming 6/82,



SCHEMATIC DRAWING **MOORING DP1N**

INSPECTION RESULTS

DP1S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in March 1982, and the buoy is in good condition. The top jewelry wire diameter measurements were all greater than 90 percent of their original diameter size. The bottom is covered with 2 inches of marine growth.

Riser

The riser chain and accessories were replaced during the 1982 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enters the bottom at a water depth of 40 feet.

Ground Ring/Ground Legs/Anchors/Concrete Sinker

Not visible for inspection.

Recommendation

This mooring is in satisfactory condition for continued use as a class A mooring.

N = not Inspected, Inaccessible N = not Inspected, Inaccessible CONDITION N = not Inspected, Inaccessible CONDITION N = Not Inspected, Inaccessible CONDITION N = Not Inspected, Inaccessible CONDITION N = Not Inspected, Inaccessible CONDITION N = Not Inspected, Inaccessible CONDITION N = Not Inspected, Inaccessible CONDITION N = Not Inspected, Inaccessible N = Not Inspected, Ina	MATER DEPTH: BOTTOM TYPE:	TH: 40'	<u> </u>	ANCHOR S	SIZE/TYP	PE: 4-1	FOR!	K CONC	Yellov	JOY TYPE:	2,47	ANCHOR SIZE/TYPE: 4-60K#CONC. BUOY TYPE: 12'0 X 6' HAWSEPIPE
N not imperial, inacceable CONMENT Not VISIBLE N	- CM -		⋛	<u>7</u>		- CEA		CORAL		Š		(NTERMITTENT USE)
NEW SINGLE LINK % DOUBLE LINK % DO SINGLE LINK % DOUBLE LINK % DO SINGLE LINK % DO SINGLE LINK % DO SINGLE LINK % DOUBLE LINK % DO SINGLE LINK % DO S	ibility]	dept = C	£		- N	ot inspect	ted, inacci	essible		į	
NEW SINGLELINK DOUBLELINK D COMMENT							CONDI	TION				
901 801 80 80 80 80 80 80 80 80 80 80 80 80 80	COM	PONENTS	2	NEW	ŞII	NGLE LII	VK &	DOU	BLE LIN	% %	a	COMMENT
FIBEPGLASS, DECK PLA CUBRER FENDERS, EDB 71 CUBRER FENDERS, EDB 7					6	6	98	8	÷08	8		
C C C C C C C C C C	BUOY	HARDWARE										FIBEPGLASS, DECK PLATE,
MOORING OVERLIAULED	SHA	KLE	/									BUBBER FENDERS, BUB RAIL: OK
7	SROUN	איום סנ	7									MOORING OUGRUAULED 3-82
20 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HAIN	CLAMP	7									
NEAR BUOY 24	0 VI 51	SLE WEAR				·						
MIDDLE VC VC A0¹ OUND RING N A VC A0¹ UPPER END V C A0¹ WIDDLE V C C WIDDLE V C C WIDDLE V C C ENTERS BOTTOM V C C UPPER END V C C UPPER END V C C UPPER END V C C WIDDLE V C C		NEAR BUOY		23	77			77			4	
DUND RING V V 40' UPPER END V N/A A0' UPPER END V N N UPPER END N N	ISER	MIDDLE			77			77			_	33" CO/NO - 60 GAUGE
DUND RING N/A Permitted UPPER END V Permitted ENTERS BOTTOM V Permitted UPPER END V Permitted WIDDLE V Permitted ENTERS BOTTOM V Permitted WIDDLE V Permitted ENTERS BOTTOM V Permitted WIDDLE V Permitted ENTERS BOTTOM V Permitted		NEAR GRD RG		1	77			72		-		
UPPER END C C ENTERS BOTTOM C C UPPER END C C ENTERS BOTTOM C C ENTERS BOTTOM C C ENTERS BOTTOM C C UPPER END C C ENTERS BOTTOM C C	GRO	UND RING		2							-	ANKHORS & GROUND LEGS
MIDDLE C C UPPER END L C MIDDLE L C ENTERS BOTTOM L C MIDDLE L C ENTERS BOTTOM L C MIDDLE L C ENTERS BOTTOM L C ENTERS BOTTOM L C ENTERS BOTTOM L C	ONLO	UPPER END	7									NOT VISIBLE
UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM ENTERS BOTTOM		MIDDLE	7									
WIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM		ENTERS BOTTOM										
MIDDLE UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM ENTERS BOTTOM	-	UPPER END	7									
ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM		MIDDLE	1									
UPPER END MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM	_	ENTERS BOTTON										
MIDDLE ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM		UPPER END	7									
ENTERS BOTTOM UPPER END MIDDLE ENTERS BOTTOM	_	MIDDLE	7				_		-			
UPPER END MIDDLE ENTERS BOTTOM		ENTERS BOTTOM										
MIDDLE ENTERS BOTTOM	_	UPPER END	7									
ENTERS BOTTOM	_	MIDOLE	7									
	_	ENTERS BOTTON						_				

LAT. COORD. (N) =
$$21^{\circ}-22^{\prime}-00.0^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-58^{\prime}-35.7^{\circ}$

ANCHOR 1 WT =
$$60,000 \text{ H}$$

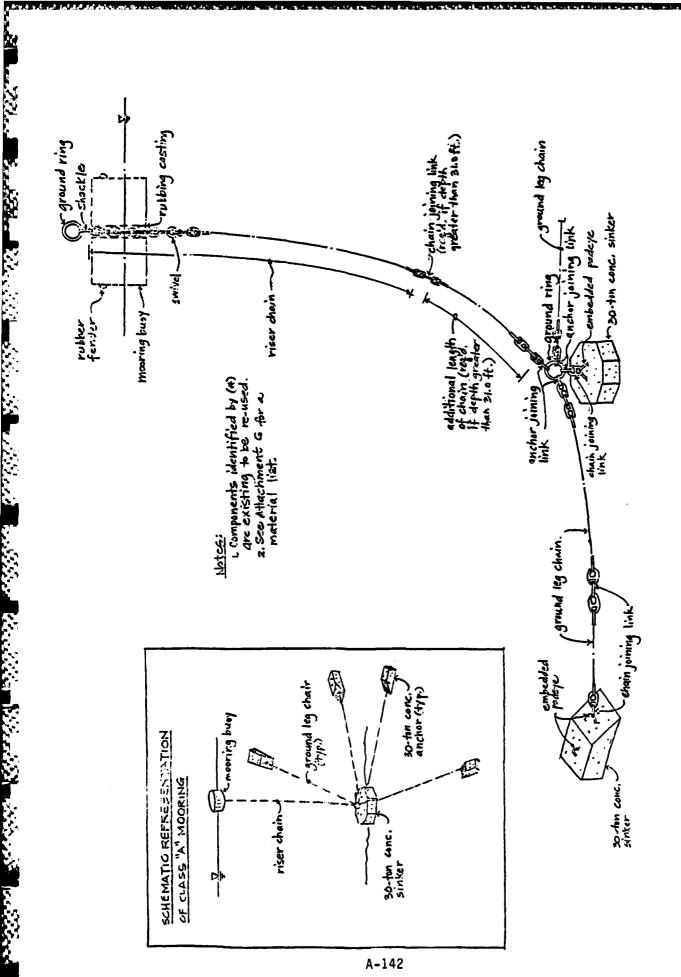
ANCHOR 2 WT = $(00.)$

ANCHOR 3 WT = $(00.)$

PADEYE SIZE = $(00.)$

PADEYE SIZE = $(00.)$

ANCHOR 2 WT =
$$\frac{(Do.)}{(Do.)}$$
 PADEYE SIZE = $\frac{(Do.)}{(Do.)}$
ANCHOR 4 WT = $\frac{(Do.)}{(Do.)}$ PADEYE SIZE = $\frac{(Do.)}{(Do.)}$



INSPECTION RESULTS

DP2N

<u>Buoy</u>

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in March 1982, and the buoy is in good condition. The top jewelry wire diameter measurements were all greater than 90 percent of their original diameter size. The chafing rail is lightly rusted, and the bottom is covered with 2 inches of marine growth.

Riser

The riser chain and accessories were replaced during the 1982 overhaul with oversized 4-inch chain in order to moor LHA/CV class ships. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enters the bottom at a water depth of 40 feet.

Anchor

The anchor was not visible and could not be inspected.

Recommendation

This mooring is in satisfactory condition for continued use as a class ${\sf C}$ mooring.

MOORING NO.: _	NO: DPZN	- 1	-CLASS:	V		LOCA	TION:	P F	Acı	AT: 21	22,13	LOCATION: DP FAC. LAT: 2122/13.6"LONG: 157°58'35.8"
WATER DEPTH:	РТН: 40	0	∢	NCHOR	SIZE/T)	/PE: 1	110K	# 601	E K	OY TYPE	4,21	ANCHOR SIZE/TYPE: 1-110K# COUK BUOY TYPE: 12 4 X 6 HAWSEPIPE
BOTTOM TYPE:		SAND		ONW. A		CLAY		CORAL		□ ROCK	.	(1) 75 (1) 75 (1) 75 (1)
Visibility		<u> </u>	D = depth	:		Z	oot inspé	NI = not inspected, inaccessible	ccessible			(INIERIMITENTOSE)
							CON	CONDITION				
9	COMPONENTS		Ž	NEW	SIF	SINGLE LINK %	NK %	DO	DOUBLE LINK %	INK %	۵	COMMENT
	:	_			+ 06	₩	-08	66	98	8	_	
BUO	BUOY HARDWARE											MOORING OVERHAULED 3-82
SHA	SHACKLE		7									DECK PLATE, RUBBER FENDERS
70219	GROUND RING	17	7								-	FIBERGLASS: 600D
CUA	CHAIN CLAMP	Δ	7									LIGHT RUST ON RUS RAIL
												NO VIGIBLE WEAR ON TOP LIAR DWIARE
	NEAR BUOY		*	4	7						100	1
RISER	MIDDLE			_	7				_		2	54:4"
,	NEAR GRD RG	9		>	7						40	3
GRC	GROUND RING		7	42						L		1
CINITORS	UPPER END		7									
LEG	MIDDLE		7									
N O. A	ENTERS BOTTOM	WO	2							<u> </u>		
ONIOOS	UPPER END		7					·				
LEG	MIDDLE		2									
	ENTERS BOTTOM	WO.	7									
oran Cas	UPPER END		7									
LEG	MIDDLE		7								_	
2.0	ENTERS BOTTOM	MO	7									
	UPPER END		7							_		
LEG	MIDDLE		7								-	
3	ENTERS BOTTOM	₩O	7								_	
DATE:	5.11.83		NGINE	ENGINEER IN CHARGE:	HARGE		THOMAS	7		IVERS:	ELSI	DIVERS: ELSASSER/SUTTON *VICE 24 PS
												CIZING - CH INI NAMUHC

MRG ID = PPZN GENERAL LOC = Departing Fac. DES CLASS = C

DATE ESTAB = March 1982 DEPTH = 36.0 ft./MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{2}-22^{2}-13.6^{"}$ LONG. COORD. (W) = $157^{2}-58^{2}-35.8^{"}$

BUOY TYPE = Rist-chain of hausepipe SIZE = 12 + x 6 hi

FENDER = Rubber

FIBERGLASS COATING = Yes

CHAIN SIZE = (23/4"

SINKER = ___ WT. OF SINKER = ___ PADEYE SIZE = __

OF ANCHORS = 1

ANCHOR 1 WT = 10,000ANCHOR 2 WT =

ANCHOR 3 WT = ANCHOR 4 WT =

PADEYE SIZE = PADEYE SIZE = PADEYE SIZE = PADEYE SIZE =

USAGE DURING PAST YEAR = 10 days

TYPE OF SHIPS MOORED = LITA-/ CC/CV

DATE OF LAST REPAIR/COST =

DATE OF LAST OVERHAUL/COST = Installation cost - \$11,000 (*)

DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY =

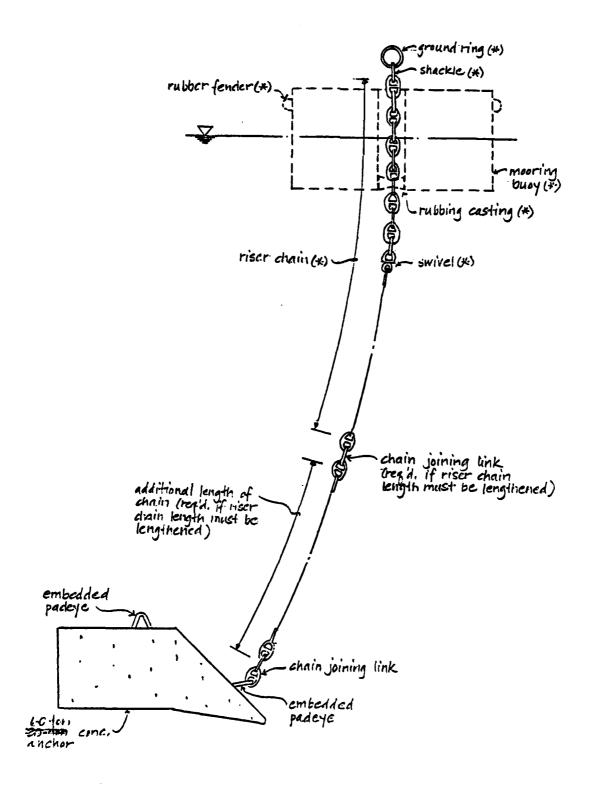
NEXT SCHED. REPAIR = 1985

NEXT SCHED. OVERHAUL = 1987

DATE SHEET COMPILED = 8-82/MS

17) FUIC J.O. 190-6626, completed 1/52; FITIST floating crane & diver services and full shop forces; super ukselst accomplishment for LIA deperming 4/82.

* DIVERS HEASURED 4" 5/83



MOORING DP2N SCHEMATIC DRAWING

INSPECTION RESULTS

DP2S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in March 1982, and the buoy is in good condition. The top jewelry wire diameter measurements were all greater than 90 percent of their original diameter size. The bottom is covered with 2 inches of marine growth.

<u>Riser</u>

The riser chain and accessories were replaced during the 1982 overhaul with oversized 4-inch chain in order to moor LHA/CV class ships. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enters the bottom at a water depth of 40 feet.

Anchor

The anchor was not visible and could not be inspected.

Recommendation

This mooring is in satisfactory condition for continued use as a class C mooring.

MOORING NO.:_	DP25 CLASS:	N	ASS:	V		LOCA	TION:	90	EAC.	LAT: 2	22,	LOCATION: DP EAC. LAT: 21,22,10" LONG: 157,58 38.4"	* 4
WATER DEPTH:	- 1		₹ 1	CHOR	SIZE/T`	YPE: L	1011-	C# CA	ALC BU	OY TYP	12,7	ANCHOR SIZE/TYPE: 1-110K# CONG BUOY TYPE: 12' & X 6' HAWSEPIPE	"1
BOTTOM TYPE:		SAND		E WOO		CLAY	<u>ب</u>	CORAL	بر	ROCK	•	(INTER	(INTERMITTENT USE)
Visibility		D = depth	Jepth			ž	= not inspected, inaccessible	ected, ir	accessib	흳		,	
							CO	CONDITION					
COM	COMPONENTS	z	Z	NEW	is -	SINGLE LINK %	LINK %	٥	DOUBLE LINK %	LINK %	٥	ŏ	COMMENT
					ŝ	₩	8	\$	98	98	<u> </u>		
BUOY	BUOY HARDWARE											MODEING OVERHAULED	AULED 3-82
SHACKLE	CKLE	7										FIRERGLASS	
GEOU	SEOUND RING		7									FIBERGLASS, DECK PLATE	SECK PLATE,
CHAIR	CHAIN CLAMP		7									PEUDERS, RUB RAIL: OK	SRAIL: OK
(NOVISI	(NOVISIBLE WEAR)	(S)											
	NEAR BUOY		*	4"	77			7			100	1 4/2 4 18	" 21 270
RISER	MIDDLE				7			7			,02	1 3 4 8/6 4 15	一一一一
	NEAR GRD RG	(5	_	→	7			7			40,	51.476"	121-14
GROL	GROUND RING	_	<u> </u>	NA				Ŀ				AUCHOR NO	11SIBLE
	UPPER END			D A			_		_				
LEG	MIDDLE			_		_		_					
	ENTERS BOTTOM	WO		_									•
	UPPER END							_					
LEG NO B	MIDDLE												
	ENTERS BOTTOM	MO											
_	UPPER END												
LEG	MIDDLE												
	ENTERS BOTTOM	OM											
_	UPPER END												
LEG	MIDDLE												
	ENTERS BOTTOM	WO		~									
DATE:	5.11.83	!	GINE	ENGINEER IN CHARGE:	HARGE	17	THOMAS	AS		DIVERS	: द्वार	DIVERS: ELSASSER SUTTON	*VICE 24"SHOWN ON AS-BUILTS

では、10mmには、10mmに対象がある。 10mmに対象がある。 10mmに対象がなる。 10mmに対象がなる。 10mmに対象がなる。 10mmに対象がなる。 10mmに対象がなる。 10mmに対象がなる。 10mmに対

Contract Con

DATE ESTAB = March 1982 DEPTH = 40.0 ft./mlw) BOTTOM = Mud

LAT. COORD. (N) =
$$21^{\circ}-22^{\circ}-01.0^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-58^{\circ}-36.4$

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE =
$$(2\frac{\%}{4})$$

USAGE DURING PAST YEAR = 10 days

TYPE OF SHIPS MOORED = LHA/CC/CV

DATE OF LAST REPAIR/COST =

DATE OF LAST OVERHAUL/COST = Installation cost = \$11,000 (4)

DATE OF LAST UNDERWATER INSPECTION = -CONDUCTED BY =

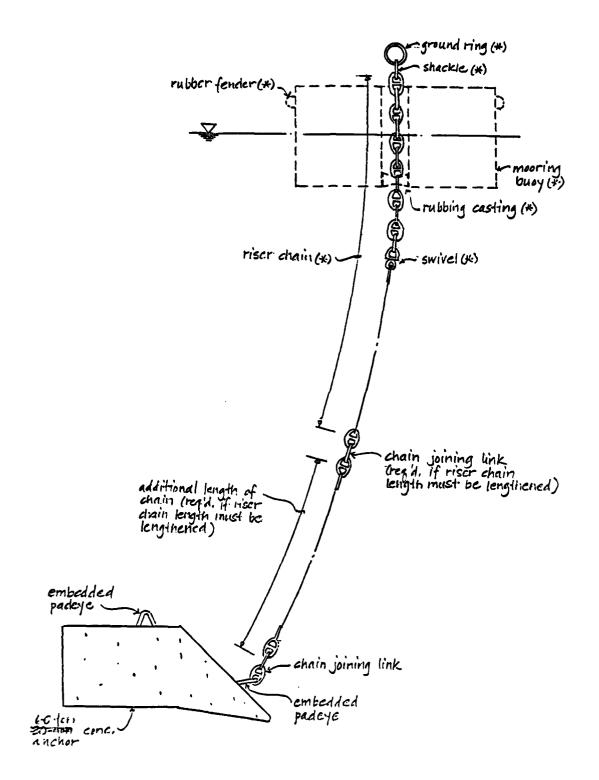
NEXT SCHED. REPAIR = 1985

NEXT SCHED. OVERHAUL = 1987

DATE SHEET COMPILED = 8-82/MS

(F) FUIC J.O. 190-6626, completed 3/82; FHNSY floating conned diver scruices and two shop forces ; super upget AT accomplishment for LHA deperioring 1/32.

DIVERS MEASURED 4"(5/83)



MOORING DP2S SCHEMATIC DRAWING

INSPECTION REPORT

DP3A

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail, all in good condition. The top metal plate and top hardware are also in good condition.

Riser

The riser is 2 3/4-inch chain. Because the riser enters the bottom just 5 feet below the surface, divers were not able to take any accurate measurements of the chain diameter.

Anchor

Not visible for inspection.

Recommendation

Based on visual inspection of the buoy and riser, the mooring appears to be in satisfactory condition for use as a class F mooring.

HOORING NO.:_	- 1	SA	CLASS	DF3A CLASS: C/F		LOCAL	10N: 1	7	¥	12.7	72.7	LOCATION: DP FAC. LAT: 21222.9 LONG: 157058 39.1"	
ATER DEPTH:	TH:		Ì	NCHOR	SIZE/T	YPE: I	60K	#CON	Z BUON	/ TYPE:	0,71	ANCHOR SIZE/TYPE: 1-60K#CONC BUOY TYPE: 12'0 X 6' HAWSEPIPE	
OTTOM TYPE		SAND	•	E Wub		CLAY		CORAL		ROCK	•		
isibility		0	D = depth			ž	ot inspe	N = not inspected, inaccessible	cessible			(ACE INTERMINED US)	
					:		CON	CONDITION					
CO	COMPONENTS		Ž	NEW	ıs	SINGLE LINK %	NK %	DOC	DOUBLE LINK %	% ¥	۵	COMMENT	
					6 6	÷08	-08	-	98	8			_
800	BUOY HARDWARE	ш										DECK PLATE, FIBERALASS,	
SHA	SHACKLE		7									RUSBER FENDERS, RUS RAIL:	
(120)	GROUND RING	34	7									A Z	
CHAIL	CHAIN CLAMP	47	7										
No VIS	NO VISIBLE WEAR	EAR)											
	NEAR BUOY	>		23/4							70P	DL 3를" / 5L 1분"	
RISER	MIDDLE			1									
	NEAR GRD RG	RG		^								READINGS REPORTED AND	
GRC	GROUND RING			472								REPEATED BY DIVERS, BUT	
	UPPER END			N/A								CONSIDERED DOUBTEUL, DE	
CACOUND LEG	MIDDLE											TO DIFFICULT ACCESS ONDER - 6004.	
	ENTERS BOTTOM	TTOM										RISER ENTERS BOTTOM AT ~5 ';	
GROUND	UPPER END											ANCHOR NOT VISIBLE,	
L'EG NO B	MIDDLE												
	ENTERS BOTTOM	TTOM											
ONLOGS	UPPER END												_
LEG	MIDDLE												
	ENTERS BOTTOM	TTOM											
	UPPER END									,			
LEG NO D	MIDDLE			_									
	ENTERS BOTTOM	TTOM		٩									
DATE.	5.11.83		FNGIN	ENGINEER IN CHARGE	MARGI	١.	10 N	THOMAS	ءَ ا	VEBC.	7	CINEBE BILACED /CUTTON	_

MRG ID = DF3A GENERAL LOC = Deperming Fac. DES CLASS = C (*)

DATE ESTAB = 1948 DEPTH = 12.0 ft.(MLW) BOTTOM = Mud

LAT. COORD. (N) = 21-22'-02.9" LONG. COORD. (W) = 157-58'-39.1"

BUOY TYPE = 21ser-chain of hawsepipe SIZE = 12 \$ x 6 hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4"

SINKER = __ WT. OF SINKER = __ PADEYE SIZE = ___

OF ANCHORS = 1

ANCHOR 1 WT = 60,000 # ANCHOR 2 WT = - ANCHOR 3 WT = - ANCHOR 4 WT = - ANCHOR

PADEYE SIZE = 21/4 4 P
PADEYE SIZE = PADEYE

USAGE DURING PAST YEAR = 10 days

TYPE OF SHIPS MOORED = LHA/CC/CV

DATE OF LAST REPAIR/COST = $\frac{1977}{$2,750}$ DATE OF LAST OVERHAUL/COST = $\frac{1-72}{?}$

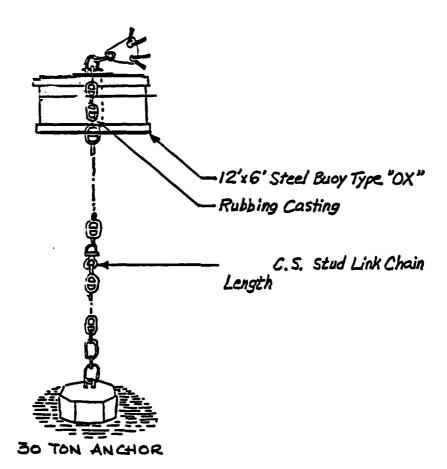
DATE OF LAST UNDERWATER INSPECTION = 1979
CONDUCTED BY = CHESDIV (UCT Two)

NEXT SCHED. REPAIR = 1985

NEXT SCHED. OVERHAUL = 1987

DATE SHEET COMPILED = 8-82/MS

(+) Down-graded to class E after 1979 U/W Insp.



MOORING DP3A SCHEMATIC DRAWING

INSPECTION RESULTS

DP6N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The buoy is in good condition.

Riser

The upper and lower section of the riser chain measured between 80 and 90 percent of the original 2 3/4-inch chain diameter. The riser enters the bottom at 40 feet.

Anchor/Sinker

Not visible for inspection.

Recommendation

A measurement between 80 and 90 percent of any mooring component is normally cause to downgrade the mooring to the next lower classification. However, in the case of Mooring DP6N, the double link measurements of even the most badly worn chain are larger than the 4 1/2-inch double link measurement of the 2 1/4-inch diameter chain required for a C class mooring. Therefore, the mooring should still be capable of withstanding C class mooring loads. However, it is recommended that this mooring never be subjected to loads in excess of the C class load limits as defined in NAVFACENGCOM Design Manual DM-26.

OTTOM TYPE: OTTOM TYPE: COMPON BUOY HA	NENTS			NEW NEW	A SIZE/I	TYPE: LOCA IN - NI - NI - SINGLE BOT - BOT	COI COI COI COI COI COI COI COI COI COI	OK# CeA CONDITION K% DC	LAY CORAL CONDITION CONDITION ELINK & DOUBLE L	CH CONC. BUOY TYPE: CORAL BOOK TYPE: Spected, inaccessible NUDITION C DOUBLE LINK % DOUBLE LINK % DOUBLE LINK %	ROCK 89	2,72	ANCHOR SIZETTYPE: 1- 60K# COND. BY TYPE: 12 4 K 6 HAWSEP! PE White Clay Coral
SHA SEOU HEIN	SHACKLE GEOWND RING HAIN CLAMIP NO VISIBLE WEAR)	Z L XA	7 7 7					1 1					DECK PLATE, RUS RAIL, FENDERS, FIBERCLASS: GOOD
RISER	NEAR BUOY MIDDLE ' NEAR GRD RG	2 2		29	7	7 7 7	77 77 77	3	77	12 12		\$ 20,04	23" GO/NO- GO GAUGE.
GROUND LEG NO. A	GROUND RING UPPER END MIDDLE ENTERS BOTTOM	TOM		477									ANCHOR & GEOUND LEG NOT VISIBLE
GROUND LEG NO. B	UPPER END MIDDLE ENTERS BOTTOM	TOM											
GROUND LEG NO. C	UPPER END MIDDLE ENTERS BOTTOM	TOM											
GROUND LEG NO. D	UPPER END MIDDLE ENTERS BOTTOM	MOT											
DATE.	5.11.83	1.] INCOME	CER.IN	ENGINEER IN CHARGE		710	THOMOS	V		rese. K	77 /2	Ess. 615ASSED CUTTON

MRG ID = DPGN GENERAL LOC = Deperming Fac. DES CLASS = C

DATE ESTAB = 1943

DEPTH = 12.0 ft. (MLW) BOTTOM = Mud

LAT. COORD. (N) = $21^{\circ}-22^{\circ}-12.8^{\circ}$ LONG. COORD. (W) = $157^{\circ}-58^{\circ}-26.8^{\circ}$

BUOY TYPE = Riser-chain of hawsepipe SIZE = 120 x 6 hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = 23/4"

SINKER = (*) WT. OF SINKER = (*) PADEYE SIZE = $2\frac{1}{4}$ ϕ

OF ANCHORS = ((*)

ANCHOR 1 WT = 60,000 # ANCHOR 2 WT =

ANCHOR 4 WT = 1

PADEYE SIZE =

ANCHOR 3 WT = 1

PADEYE SIZE = PADEYE SIZE =

USAGE DURING PAST YEAR = 10 days

TYPE OF SHIPS MOORED = LHA/CC/CV

DATE OF LAST REPAIR/COST = 1977/#4,050

DATE OF LAST OVERHAUL/COST = Installation cost = #11,000 (**)

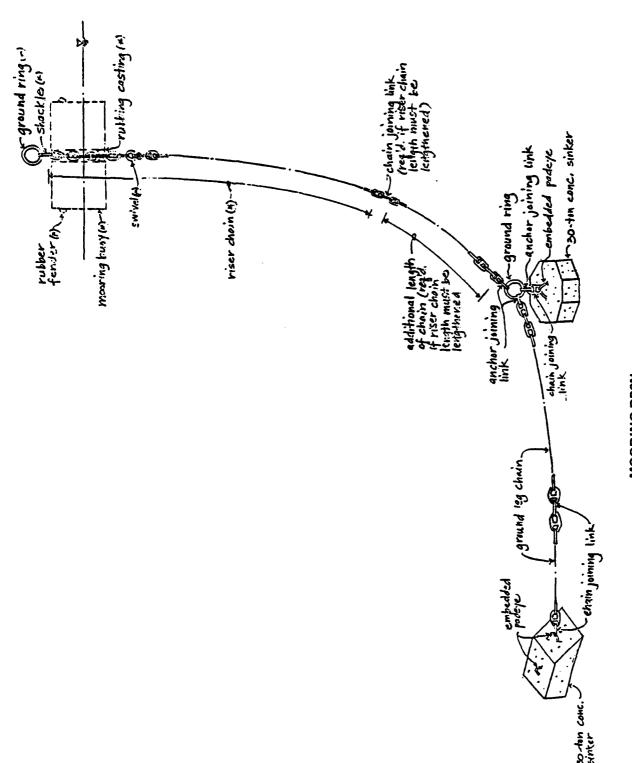
DATE OF LAST UNDERWATER INSPECTION = CONDUCTED BY = CHESDIV (UCT TWO)

NEXT SCHED. REPAIR = 1985

NEXT SCHED. OVERHAUL = 1987

DATE SHEET COMPILED = 8-82/MS

- (*) This class C mooring has I sinker & I ground lea as directed by Ecferming Facility.
- (**) PUC J.O. 190-6626, completed 3/B2; PHNSY floating crane & diver services and Purc shop forces; super urgent accomplishment for LHA deperming 4/82,



MOORING DP6N SCHEMATIC DRAWING

INSPECTION REPORT

T1N

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders. The bottom is covered with 2 to 2 1/2 inches of marine growth. The top jewelry measurements were greater than 90 percent of their original wire diameters. The buoy is in good condition.

Riser

The lower portion of the riser measures between 80 and 90 percent of its original $2\ 3/4$ -inch chain. The riser enters the bottom at a depth of 50 feet.

Anchors

Not visible for inspection.

Recommendation

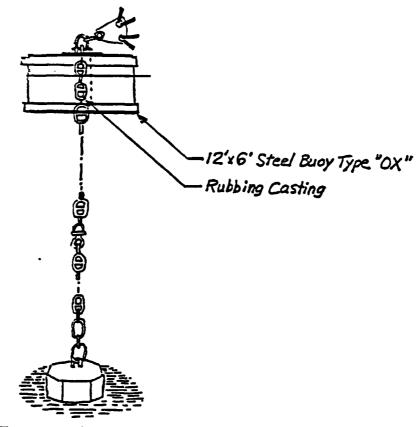
A measurement between 80 and 90 percent of any mooring component is normally cause to downgrade the mooring to its next lower classification. However, in the case of Mooring T1N, the double link measurements of even the most badly worn chain are larger than the 1 1/2-inch double link measurement of the 3/4-inch diameter chain required for a G class mooring. Therefore, it is recommended that this mooring never be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

HOOHING NO.:	2	2	CLASS:	الا		10CA1	NOI:	EST L	SHI'S	1:21.2	13.5	LOCATION: WEST LOCHLAT: 21 21 12.5 LONG: 157 58 59.7"	
ИТЕН ВЕРТИ:		-8		NCHOR	SIZE/T\	/PE: 1-6	SOK#	CON	E BUOY	TYPE:	x 4,2	ANCHOR SIZE/TYPE: LEOK# CONC. BUOY TYPE: 12'0 X 6' HAWSEPIPE (NOT IN USE)	
OTFOM TYPE		SAND		T WUD		CLAY		CORAL		☐ ROCK	Visibil	Visibility 2, D = depth NI = not inspected, inaccessible	ē
							COND	CONDITION					
CO	COMPONENTS		ž	NEW	SIL	SINGLE LINK &	NK %	100	DOUBLE LINK %	* *	۵	COMMENT	
	•				90	80+	-08	1 06	+00	-08			
(OU8	BUOY HARDWARE	E										RUBBER FENDER : 6000	
SHAC	SHACKLE		7	24"								FIBER6LASS: GOOD	_
MALLE	MALL GROWND RING	יושפ	7	18/2									
No VISI	NO VISIBLE WEAR	AR)										TO OF RISER CHAIN, S/L 27.	<u> </u>
					1						_		_
	NEAR BUOY	>		2%.	7	7		177			10P	23° 60/20.60 GAUGE	
RISER	MIDDLE							77			, S7		T -
	NEAR GRD RG	RG		->	1/7				137		B		1
CHC	GROUND RING			N/A								SINGLE ANCHOR. NOT VISIBLE	
	UPPER END			N/A									T
LEG NO A	MIDDLE												
V .	ENTERS BOTTOM	HTOM											7
GROUND	UPPER END												T
LEG FEG	MIDDLE												_
	ENTERS BOTTOM	TTOM											Τ-
CHOUND	UPPER END												_
LEG NO C	MIDDLE												ī
	ENTERS BOTTOM	MOTI											1
CINI IOUS	UPPER END												ī
1 EG	MIDDLE												
	ENTERS BOTTOM	MOTIC		→									1
.4140	8.8.8	×	FAICHA	2141 11 12	300011	7	Samoth	V		.5000	70.7	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1

FLEET MOORING DATA SHEET

LAT. COORD. (N) =
$$21^{\circ}-21^{\circ}-13.5^{\circ}$$
 LONG. COORD. (W) = $157^{\circ}-58^{\circ}-54.7^{\circ}$

PADEYE SIZE = 21/4
$$\phi$$
PADEYE SIZE = -



30 TON ANCHOR

MOORING T1N SCHEMATIC DRAWING

INSPECTION RESULTS

T1S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders. This buoy is in good condition.

Riser

The riser chain measured between 80 and 90 percent of its original $2\ 3/4$ -inch wire diameter. The riser connection to the anchor hairpin was visually identified.

Anchor

The top of the anchor was visually identified and its hairpin measured to be 1 3/4 inches, which is satisfactory for a class G mooring.

Recommendation

A measurement between 80 and 90 percent of any mooring component is normally cause for a mooring to be downgraded to the next lower classification. However, in the case of Mooring T1S, the double link measurements of even the most badly worn chain are larger than the 1 1/2-inch double link measurement of the 3/4-inch diameter chain required for a G class mooring. Therefore, the mooring chain should still be capable of withstanding G class mooring loads. Due to the smaller diameter of the anchor hairpin (1 3/4 inches), it is recommended that this mooring not be subjected to loads in excess of the G class load limits as defined in NAVFACENGCOM Design Manual DM-26.

MODRING NO .: TIS	₽::Q	15	_CLASS:	7		Fo	SATION		3. Lox	THTT	7.17	1,14.5	LOCATION: WEST LOCH LAT: 21 21 14.5 LONG: 157 59 0.7"
WATER DEPTH:		50,		NCHOR	I SIZE	/TYPE:	79-1	と歩く	ork.	BUOY	TYPE: 1	7 4,2	ANCHOR SIZE/TYPE: 1-60K# COLC. BURY TYPE: 12' X 6' HAMSEPIPE (NOT IN USE)
BOTTOM TYPE:	rPE:	SAND		E MUD	a		Α	CLAY CORAL	BAL	ā	☐ ROCK	Visibil	Visibility \mathbf{Z}' D = depth NI = not inspected, inaccessible
							٥	CONDITION	NO				
COF	COMPONENTS	S	ž	NEW		SINGLE LINK &	FLINK	×	DOUB	DOUBLE LINK %	× ×	a	COMMENT
					36	+06		-08	÷06	ĝ	8		
BUO	BUOY HARDWARE	ARE			,								RUBBER FENDER: 6000
SHACKLE	イト		7										FIBERGLASS: GOOD
GROUND RING	2 40	ING	7										
NO VISIBLE WEAR	31E W	(EAR)											
													23 60/NO.60 GAUGE
	NEAR BUOY	NOV		234"		7	7.	7	3			100	1
RISER	MIDDLE	u l		_	77	72		7.	7			30,	
	NEAR G	NEAR GRD RG		->	33	ζ,			_	77		4.	
GRC	GROUND RING	Ş	*	1%	_				,			45	45' *13 HARPIN ON CLUMP
	UPPER END	END		NA									VICE 2 14" ON AS-BUILTS,
L EG	MIDDLE	ш		_									
	ENIERS	ENTERS BOTTOM											
GROUND	UPPER END	END											
LEG NO B	MIDDLE	LI.											
	ENTERS	ENTERS BOTTOM											
	UPPER END	END											
LEG NO	MIDDLE												
	ENTERS	ENTERS BOTTOM					-			,			
CIMINOS	UPPER END	END											
LEG NO D	MIDD1 E				·								
	ENIERS	ENTERS BOTTOM		-	<u>_</u>	_	_		_				

DIVERS: KRUSE/TORRENS

ENGINEER IN CHARGE: THOMAS

5.83

FLEET MOORING DATA SHEET

MRG ID = T1S GENERAL LOC = West Loch DES CLASS = C(+)

DATE ESTAB = 1957

DEPTH = 28.0 H. (NLW) BOTTOM = Mud

LAT. COORD. (N) = $-21^{\circ}-22^{\dagger}-14.5^{\circ}$ LONG. COORD. (W) = $157^{\circ}-59^{\dagger}-00.7^{\circ}$

BUOY TYPE = Riser-chain wy hawsepipe SIZE = 12/0 x 6/hi

FENDER = Rubber FIBERGLASS COATING = Yes

CHAIN SIZE = $2^{3/4}^{1}$

SINKER = __ WT. OF SINKER = ___ PADEYE SIZE = __

OF ANCHORS = !

ANCHOR 1 WT = 60,000 #

ANCHOR 2 WT = ANCHOR 3 WT = -ANCHOR 4 WT = -

PADEYE SIZE = PADEYE SIZE = PADEYE SIZE = PADEYE SIZE =

USAGE DURING PAST YEAR = 10 days

TYPE OF SHIPS MOORED = Landing craft

DATE OF LAST REPAIR/COST = 1977 / \$-2,750

DATE OF LAST OVERHAUL/COST = '-72/ ?

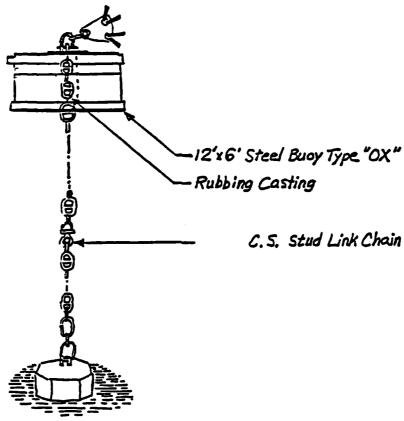
DATE OF LAST UNDERWATER INSPECTION = __ CONDUCTED BY = CHESDIN (UCT Two)

NEXT SCHED. REPAIR = 1984-

NEXT SCHED. OVERHAUL = 1986

DATE SHEET COMPILED = 8-82/MS

(*) Down-graded to Class & after 1979 U/W Insp.



30 TON ANCHOR

MOORING T1S SCHEMATIC DRAWING

INSPECTION RESULTS

X9S

Buoy

This is a 12-foot-diameter, 6-foot-high drum-type buoy with a hawsepipe. The buoy is fiberglass coated and has two rubber fenders and a galvanized pipe chafing rail. The mooring was overhauled in December 1982, and the buoy is in good condition. The jewelry showed no sign of wear. The buoy bottom is covered with medium marine growth.

Riser

The riser chain and accessories were replaced during the 1982 overhaul. The riser is in good condition with all wire size measurements greater than 90 percent of original diameter. The riser enter the bottom with the ground ring at 42-foot water depth.

Ground Ring

The ground ring was located partially buried in the bottom at a depth of 42 feet.

Ground Legs/Anchors/Sinker

Not visible for inspection.

Recommendation

This mooring is in satisfactory condition for continued use as a class A mooring.

ADORING NO.:	10: X95	_CLASS:_	4		LOCAT	DN: M	K57 L0	CH LAT	1.22	2,48	LOCATION: EAST LOCH LAT: 22 22 48 "LONG: 157 57 16.5"
VATER DEPTH:	тн: 42'		ANCHOR SIZE/T	SIZE/TY	PE: 4	-60K	#CON	£ BUOY	TYPE:	2.42	YPE: 4-60K# CONC BUOY TYPE: 12 4 X6 HAWSETYPE.
OTTOM TYPE:	PE: SAND	9	DW/Z		G(AY		CORAL		Rock		(NOT IN USE)
/isibility	١٠٠/ ٥	O = depth			e I Z	ot inspec	NI = not inspected, inaccessible	essible			
						CONDITION	TION				
CO	COMPONENTS	ž	NEW	NIS	NGLE LINK %	NK %	000	DOUBLE LINK %	*	۵	COMMENT
				8	8 0+	-08	÷06	98	8		
BUOY	BUOY HARDWARE										MOORING OVERHAULED 12-82
SETACI	DETACH. LINK	7									FIBERCLASS:OK
SHACKLE	S.E.	7									RUBISER FENDER, RUB RAIL,
DETAC	DETACH. LINK	7									DECK PLATE: OK
P.S. LINK	INK	7	1								NO VISIBLE WEAR ON TOPSIDE HARDWAR
	NEAR BUOY		23	7			7			401	
RISER	MIDDLE		_	7			7		Í	20,	27 60/NO-60 GAUGE
	NEAR GRD RG		>	7			7			40'	
CORTO	CORDONE RING	*	22/4								ANCHORS & GROUND LEGS
	UPPER END	7									ı
LEG	MIDDLE	7									
۲ ک	ENTERS BOTTOM	7									
000	UPPER END	7									
LEG NO B	MIDDLE	7									
2	ENTERS BOTTOM	7									
	UPPER END	7									
LEG	MIDDLE	7									
. C	ENTERS BOTTOM	7									
	UPPER END	7									
LEG	MIDDLE	7									
	ENTERS BOTTOM	7									
DATE:	5.5.83	ENGIN	ENGINEER-IN-CHARGE: THOMAS	HARGE	A	May	45) a	/ERS: [2815	DIVERS: REIST AUSTIN * EVE ON CLUMP 23

PER AS-BUILTS

FLEET MOORING DATA SHEET

DES CLASS = A #

LAT. COORD. (N) =
$$22^{2}-22^{1}-48.0^{4}$$

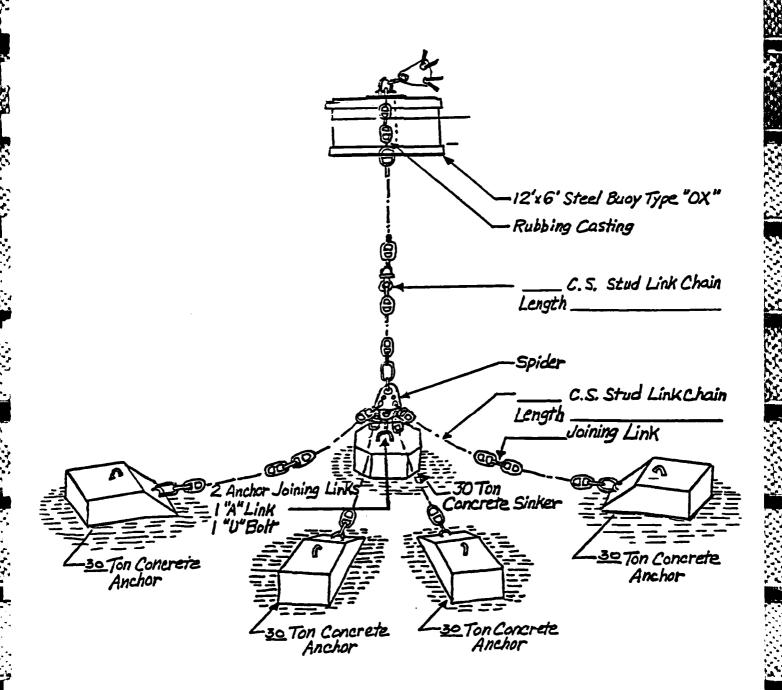
LAT. COORD. (N) =
$$22^{2}-22^{1}-48.0^{4}$$
 LONG. COORD. (W) = $157^{1}-57^{1}-16.5^{8}$

CHAIN SIZE =
$$\frac{2^{3}4^{4}}{4}$$

USAGE DURING PAST YEAR = 20 days

ANCHOR 2 WT =
$$(p_0.)$$

ANCHOR 3 WT = $(p_0.)$
ANCHOR 4 WT = $(p_0.)$

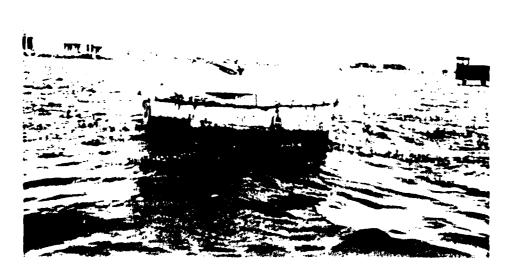


MOORING X9S
SCHEMATIC DRAWING

ANNEX B
PHOTOGRAPHS



The Two Anchors of Mooring AM13 Located Side by Side



Damaged Wooden Fender of Buoy AM13A



Typical Amount of Marine Growth Below the Water Line



Buoy D5N Floating on its Side



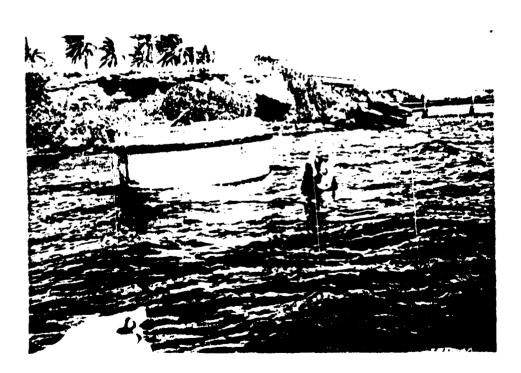
Fender Damage to Buoy D6M/6S



Buoy D12S With Missing Fender



Buoy D11S - An Older Wood Fendered Buoy With a Broken Wooden Chafing Rail



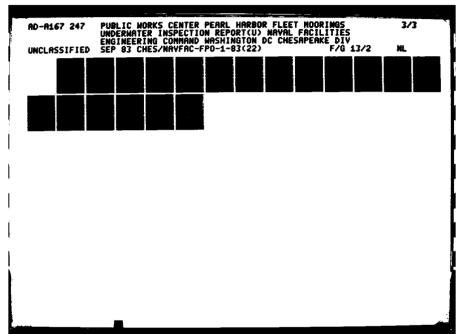
Buoy DP3A Installed in Less than Five Feet of Water

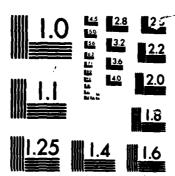


Typical Rusting of Top Deck Plate, Hardware, and Chafing Rail



Typical Condition of Recently Overhauled Buoys





MICROCORY

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ANNEX C

REFERENCES

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ARE SIDE BY SIDE IN 2-3 FEET OF WATER NEAR FORD ISLAND. MOORING									
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- B. MIDDLE LOCH ISMF {INACTIVE SHIPS MAINTENANCE FACILITY}
- {1} MOORING D2N: CHAIN NEAR BOTTOM OF RISER WORN TO 1-1/2
 INCH DIAMETER, FROM ORIGINAL 2-3/4 INCH. RECOMMEND MOORING BE
 DOWNGRADED TO CLASS F.
 - C. WEST LOCH:
- {}} MOORING CMM: SEVERE WEAR IN CHAIN AT 17 FEET DEPTH.

 CHAIN WORN TO 1/2 INCH DIAMETER FROM ORIGINAL DIAMETER OF 2-INCH.

 RECOMMEND USE OF MOORING BE DISCONTINUED, AND MOORED CAISSON BE

 RELOCATED.
- 2. ALL OTHER MOORINGS APPEAR ADEQUATE FOR USE WITHIN PRESENTLY

 DESIGNATED CLASSIFICATIONS. IT SHOULD BE NOTED, HOWEVER, THAT MOST

 MOORINGS HAVE BEEN DOWNGRADED AS A RESULT OF PRIOR INSPECTIONS.

 IF A REQUIREMENT EXISTS TO USE THE MOORINGS AT ORIGINAL DESIGN

 CAPACITY, OVERHAULS WILL BE REQUIRED. ABOVE INFORMATION WAS

 INFORMALLY PASSED TO PWC, PEARL HARBOR PERSONNEL ON 12 MAY 1983.

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ROUTINE

R 142348Z APR 83

FM PMC PEARL HARBOR HI

TO CHESNAVFACENGCUM WASHINGTON DC

INFO PACNAVFACENGEOM PEARL HARPOR HI

BT UNCLAS //N11000//

SUBJ: FLEET MOORING INSPECTIONS

- A. CHESNAVFACENGCOM WASHINGTON DC 062031Z APR 83
- 1. THE MOORING HISTORY AND OTHER INFORMATION REQUESTED BY REF (A) WAS PREVIOUSLY FORWARDED BY MAIL ON 30 MAR 83.
- 2. PWC PEARL POINT OF CONTACT IS MR. MARK SHIMABUKURO AT THE FACILITIES ENGINEERING DIVISION (CODE 1011), PH NO. (808)474-1172.81

DLVR: CHESNAVFACENGCOM WASHINGTON DC(9)...ACT

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TO PWC PEARL HANBUR HI

INFO COMNAVFACENGCOM ALEXANDRIA VA PACNAVFACENGCOM PEARL HARBOR HI UCT TNO

BT UNCLAS //N11000//

SUBJ: FLEET MOORING INSPECTIONS

- 1. AS DISCUSSED IN TELEPHONE CONVERSATION BETWEEN MR. MARK SHIM/BUKURO (PMC PEAR HARBOR) AND MR. TED JONES (CHESNAVFACENGCOM) ON 29 MAR 83, CHESNAVFACENGCOM, MITH SUPPORT FRUM UCT TWO, PLANS TO CONDUCT AN UNDERNATER INSPECTION OF THE 45 MOORINGS UPERATED AND MAINTAINED BY PMC PEARL HARBOR AS PART OF THE COMNAVFACENGCOM FLEET MOORING MAINTENANCE (FMM) PROGRAM DURING THE PERIOD 1-21 MAY 83. AVAILABLE DATA INDICATES 21 CLASS A MOORINGS, 16 CLASS C MOURINGS, 5 CLASS D MOORINGS, AND 3 CLASS G MOORINGS, ALL IN 12-42 FEET OF WATER.
- 2. THE FLEET MOORING INSPECTION TEAM WILL CONSIST OF A CHESDIV ENGINEER-IN-CHARGE (EIC) AND A DET FRUM UCT TWO. IN ORDER TO PREPARE A DETAILED INSPECTION PLAN, THE FULLOWING INFORMATION IS REQUIRED PER MOORING:
- A. MATNTENANCE HISTORY WHEN INSTALLED, WHEN INSPECTED, WHEN OVERHAULED, LAST REPORTED CONDITION, ETC.
 - B. COPIES UF MODRING DESIGN CALCULATIONS AND DRAWINGS.
 - C. COPIES OF "AS-BUILT" MATERIALS LIST.

DLVR: CHESNAVFACENGCOM WASHINGTON DC(9)...URIG

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- D. FACILITY MAP SHOWING LOCATION OF ALL MODRINGS, WITH SPECIFIC LOCATIONS FOR THOSE CURRENTLY IN USE.
- E. ANTICIPATED MUDRING USAGE DURING THE INSPECTION PERIOD TYPES OF SHIPS.
- F. PLANNED REPAIRS AND OVERHAULS PARTICULARLY THUSE BEFORE THIS INSPECTION.
 - G. TYPES AND CLASSES OF SHIPS USING MOURINGS.
- H. WHETHER CATHODIC PROTECTION SYSTEMS ARE INSTALLED AND TYPE OF MATERIAL UTILIZED.
- 3. PMC, PEARL HARBOR IS REQUESTED TO MAIL THE ABOVE INFORMATION AS SOON AS POSSIBLE TO CHESNAVFACENGOUM (CODE FPO-107), BLDG. 212, MASHINGTON NAVY YARD, WASHINGTON, D. C. 20374.
- 4. ADDITIONALLY, PMC PEARL HARBOR IS REQUESTED TO REPLY BY MESSAGE WITH THE ABOVE INFORMATION EXCEPT FOR DRAWINGS AND MAPS BY 15 APR 83.
- 5. CHESNAVFACENGEOM POINT OF CONTACT IS MR. J. MCLAUGHLIN UR MR. T. THUMAS AT AUTOVON 288-3881 OR (202) 433-3881.
- 6. YOUR TIMELY SUPPORT WILL BE GREATLY APPRECIATED. BT

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ROUTINE

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TO PWC PEARL HARBOR HI

INFO COMMAVFACENGOOM ALEXANDRIA VA PACNAVFACENGOOM PEARL HARBUR HI UCT TWO

BT UNCLAS //N11000//

SUBJ: FLEET MOURING INSPECTIONS

- 1. AS DISCUSSED IN TELEPHONE CONVERSATION BETWEEN MR. MARK SHIMABUKUHO (PWC PEAR HARBOK) AND MR. TED JUNES (CHESNAVFACENGCOM) ON 29 MAR 83, CHESNAVFACENGCOM, WITH SUPPORT FROM UCT TWO, PLANS TO CONDUCT AN UNDERWATER INSPECTION OF THE 45 MOORINGS UPERATED AND MAINTAINED BY PWC PEARL HARBOR AS PART OF THE CUMNAVFACENGCOM FLEET MOORING MAINTENANCE (FMM) PROGRAM DURING THE PERIOD 1-21 MAY 83. AVAILABLE DATA INDICATES 21 CLASS A MOORINGS, 16 CLASS C MOORINGS, 5 CLASS D MOORINGS, AND 3 CLASS G MOORINGS, ALL IN 12-42 FEET OF WATER.
- 2. THE FLEET MODRING INSPECTION TEAM WILL CONSIST OF A CHESDIV ENGINEER-IN-CHARGE (EIC) AND A DET FROM UCT TWO. IN ORDER TO PREPARE A DETAILED INSPECTION PLAN, THE FOLLOWING INFORMATION IS REQUIRED PER MODRING:
- A. MAINTENANCE HISTORY WHEN INSTALLED, WHEN INSPECTED, WHEN OVERHAULED, LAST REPORTED CONDITION, ETC.
 - B. CUPIES OF MOORING DESIGN CALCULATIONS AND DRAWINGS.
 - C. CUPIES OF "AS-BUILT" MATERIALS LIST.
- D. FACILITY MAP SHUWING LOCATION OF ALL MOORINGS, WITH SPECIFIC LOCATIONS FOR THOSE CURRENTLY IN USE.
- E. ANTICIPATED MUDRING USAGE DURING THE INSPECTION PERIOD TYPES OF SHIPS.
- F. PLANNED REPAIRS AND OVERHAULS PARTICULARLY THOSE BEFORE THIS INSPECTION.
 - G. TYPES AND CLASSES OF SHIPS USING MOORINGS.
- H. WHETHER CATHODIC PROTECTION SYSTEMS ARE INSTALLED AND TYPE OF MATERIAL UTILIZED.

DLVR: CHESNAVFACENGCOM WASHINGTON DC(9)...ORIG

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- 3. PWC, PEARL HARROR IS REQUESTED TO MAIL THE ABOVE INFORMATION AS SOON AS POSSIBLE TO CHESNAVFACENGCOM (CODE FPO-1C7), BLDG. 212, WASHINGTON NAVY YARD, WASHINGTON, D. C. 20374.
- 4. ADDITIONALLY, PMC PEARL HARBOR IS REQUESTED TO REPLY BY MESSAGE WITH THE ABOVE INFORMATION EXCEPT FOR DRAWINGS AND MAPS BY 15 APR 83.
- 5. CHESNAVFACENGCOM POINT OF CONTACT IS MR. J. MCLAUGHLIN DR MR. T. THOMAS AT AUTOVON 288-3881 OR (202) 433-3881.
- 5. YOUR TIMELY SUPPORT WILL BE GREATLY APPRECIATED. BT

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SUBJ: UCT THU FYB3 EMPLOYMENT TASKING

PLVM: CHESHAVFACENGOU! MASHINGTON UC(9) ... IMFO

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114776/235 1 UF 3 M1 0308 235/23:21Z 210331Z AUG 82 C5M:Rxdyn0304 CINCPACFLT PEARL HARBOR HI

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- CINCPACFLT PEARL HARBOR HI 260654Z JUN 82
- REF A REQUESTED NOMINATIONS OF PROJECTS FOR UCT TWO ACCOM-PLISHMENT FY83-85. FROM THE RESPONSES TO REF A THE FOLLOWING PROJECTS ARE TASKED FOR ACCOMPLISHMENT IN FY83:
 - CENTERVILLE BEACH (CLASSIFIED)
 - ARCTIC WEST (CLASSIFIED) В.
 - BARKING SANDS, HI, CABLE LANDING AND REPAIRS
 - WPNSTA SEAL BEACH, DEMOLISH ANAHEIM BAY BRIDGE
 - NSD SUBIC, PILE REPAIR POL PIER
 - NSD SUBIC, PILE REPAIR MARINE TERMINAL PIER PHASE I (REPAIR ALL SEVERE AND MAJOR DAMAGE)
 - NAVSHIPREPFAC SUBIC, INSPECT ALAVA WHARF G.
 - FLEET MUDRING INSPECTION PACIFIC DATA BASE (PEARL HARBOR HI, GUAM, YOKOSUKA, INAKUNI, SASEBO, INDIAN ISLAND WA, BREMERTON WA)
 - NAVMAG LUALUALEI, INSPECT AMMO PIERS W1-5 J.
 - UNDERWATER INSPECTION PROGRAM (NSC SAN DIEGO)
 - SUPASE, BANGOR WA, UNDERWATER INSPECTION Κ.
 - TRIREFFAC BANGOR WA, UNDERWATER MSF RANGE REPAIR
 - DEGAUSSING RANGE SURVEY, SAN FRANCISCO CA
 - NAVPHIBASE CORONADO SAN DIEGO CA, PIER INSPECTIONS
- THE FOLLOWING PROJECTS ARE TASKED AS FILL IN WORK FOR FY83: 2.
 - UNDERWATER INSPECTION PROGRAM (NAVSTA PEARL HARBOR)
 - В. NAVUSEAWAKENGSTA KEYPORT WA, INDIAN IS PHASE TWO MOORING
 - NSD GUAM, REPAIRS TO SIERRA WHARF GUAM. REQUIRES COURDINATION WITH ON SITE NMCB FOR ACCOMPLISHMENT.

THE FOLLOWING PROJECTS ARE TENTATIVELY TASKED FOR ACCOMPLISHMENT AS IMPLICATED:

- FY-84
 - ARCTIC WEST (CLASSIFIED) (1)
 - (2)
 - NAVSHIPREPFAC GUAM, REPAIRS TO LIMA WHARF FLEET MOORING INSPECTION PACIFIC DATA BASE 9SUBIC (3) BAY, NSF DIEGO GARCIA, PNC SAN DIEGO, NAVSTA SAN DIEGO, WPNGTA SEAL BEACH, NAVSTA LONG BEACH)
 - NSU SUBIC, WATERFRUNT FACILITIES INSPECTION (4)
 - NSD SUBIC, MONUBUDY FUEL LINE REPAIRS (5)
 - DEGAUSSING RANGE SAN FRANCISCO, RANGE INSTALLATION (6)
 - UNDERWATER INSPECTION PROGRAM CNAVSHIPY PEARL HARBOR, (7) NSC PEARL HARBOR, SUBASE PEARL HARBOR)
 - (8) SCARF REPAIR/INSPECTION
 - BARKING SANDS, UNDERWATER RANGE REPAIRS (9)
 - NSD SUBIC, PILE REPAIR MARINE TERMINAL PIER PHASE 2 (10)

210331Z AUG &2 235/23:212 2 OF M1 0308 114776/235 CINCPACELT PEARL HARBOR HI RX0Y00304

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(REPAIRS , TO MODERATE AND MINOR DAMAGE)

B. FY-85

Sample Control Services

- (1) ARCTIC WEST (CLASSIF; ED)
- (2) BARKING SANDS & UNDERWATER RANGE WORK
- (3) FLEET MOORING INSPECTION PACIFIC DATH UNDE GRARL HARROR HI, GUAM, JAPAN, PUGET SOUND BA)
- (4) UNDERWATER INSPECTION PROGRAM (MARE TELAND EA)
- (5) SUBASE FEARE, MCON P-088, REPAIR AND EXTEND SERMALL THIS PROJECT WILL REQUIRE SEPARATE TASKING OF AN RUMCH, CBU, OR OTHER ORGANIZATION AS "FRIME CONTRACTOR" FOR PILE DRIVING AND TOPSIDE ZONE, WATH UCT ACCOMPLISHING ALL WATER SUPPORT,

.147 e/211 S :8XC 003 A ON A NI GUGA PULLAGUES PRINCESTIZ AUG 82 Elngeburga Pharu Harbor Hi

OPRAV SZIS/ISA JIEV & 701 S/M-0107-LF 776-8859 DEPARTMENT OF THE NAVY

Memorandum

1011:MS:hn

30 NOV 1982

FROM: Code 1011

TO:

(1) Code 101

(2) Code 100

SUBJ: Fleet Moorings at the Inactive Ship Maintenance Facility, Middle Loch, Pearl Harbor

Ref

- (a) On-site visit by M. Nakamura (PACNAVFACENGCOM) and M. Shimabukuro (PWC PEARL) on 24 Nov 1982
- (b) Conversation btwn K. Mukaigawa (PACNAVFACENGCOM) and M. Shimabukuro (PWC PEARL) on 24 Nov 1982

Enc 1

- (1) Fleet Mooring Location Plan at Inactive Ship Maintenance Facility
- (2) Plan at Moorings D8N, D8M, D8S
- (3) Plan at Moorings D7, D6, & D5
- 1. Enclosure (1) is a fleet mooring location plan of the moorings presently on record at the Inactive Ship Maintenance Facility.
- 2. Reference (a) was conducted following the passage of Hurricane Iwa on 23 Nov 1982 and the following items are noted regarding the fleet moorings:
 - a. Failure of Mooring D8S:

Three nested ships were moored to D8M and D8S in bow-and-stern fashion as shown on enclosure (2). D8M and D8S are classified as Class C moorings, with buoy, 2-1/4" diam. riser chain, and one 30-ton conc. anchor block.

Mooring D8S apparently failed at the riser chain or anchor block padeye because the buoy was still attached to the mooring line from the ships. This failure resulted in the ships being in a free-swinging mooring (i.e., the ships are allowed to swing in any direction and become bow to the wind). Because of this, a timber-pile power dolphin adjacent to D8M was demolished as the ships swung into it.

b. Obvious displacement of moorings D6N, D6M, D6S, D5N, D5M, and D5S:

The destroyers Somers and Morton were moored to D7N, D7M, D7S, D6N, and D6S and the OTEC research vessel moored to D6N, D6M, D6S, D5N, D5M, and D5S, as shown on enclosure (3). All these moorings are Class C or less, with a buoy, riser chain (2-1/4" diam. or less), and one 30-ton concrete anchor or sinker block.

It appears that the three moorings at D7 have been minimally displaced. However, the moorings at D6 and D5 have been displaced to a large extent. The OTEC vessel appears to have dragged the D5 moorings toward line D6 and the vessel has also rotated such that its stern was in contact with the Morton. This rotation has caused the D6 moorings to be displaced. It may be possible that one or two of the moorings at D5 and D6 have failed vice being displaced. See enclosure (3).

1011:MS:hn

Subj: Fleet Moorings at the Inactive Ship Maintenance Facility, Middle Loch, Pearl Harbor

- c. Other moorings with ships moored:
- (1) D12N and D12M bow-stern mooring of 5 small ships; minimal displacement,

if any.
(2) D11N and D11M - bow-stern mooring of 3 small ships; minimal displacement.

if any.

(3) DION and DIOM - bow-stern mooring of 3 small ships; minimal displacement.

if any.

- (4) D10M and D10S bow-stern mooring of 2 small ships; minimal displacement, if any.
 - d. Other moorings with NO ships moored:
- (1) D9N, D9M, D9S, and D1M presently being overhauled under contract N62471-82-C-2164.
 - (2) D2N, D2S, D3N, D4N, and D4S no apparent displacement.
- 3. Other damage or displacements resulting from the storm:
- a. Complete destruction of timber-pile dolphin adjacent to mooring D8M from impact by moored ships after failure of one of the ships moorings (listed above as item 2a).
- b. Damage to transformers at two timber-pile power dolphins resulting in loss of electrical power to the ships moored in the vicinity.
- c. Displacement in position of several floating dyrdock sections moored to bottom anchorages at north end of Middle Loch.

These items are included for information only and are not under the cognizance of the PWC PEARL Fleet Mooring Program.

4. During reference (b), PACNAVFACENGCOM indicated that NAVFAC will be contacted and funds requested to restore the damaged/displaced fleet moorings.

Copy to: (w/encl)

112

PACNAVFACENGCOM (Code 102)

Respectfully.

Truk Stimabrekurs

Mark Shimabukuro

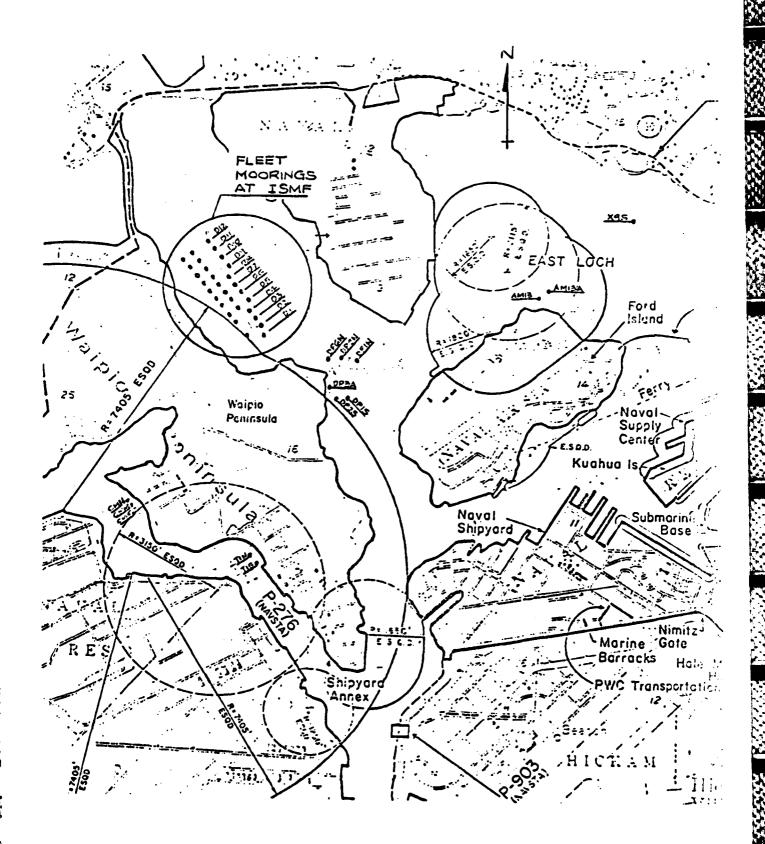
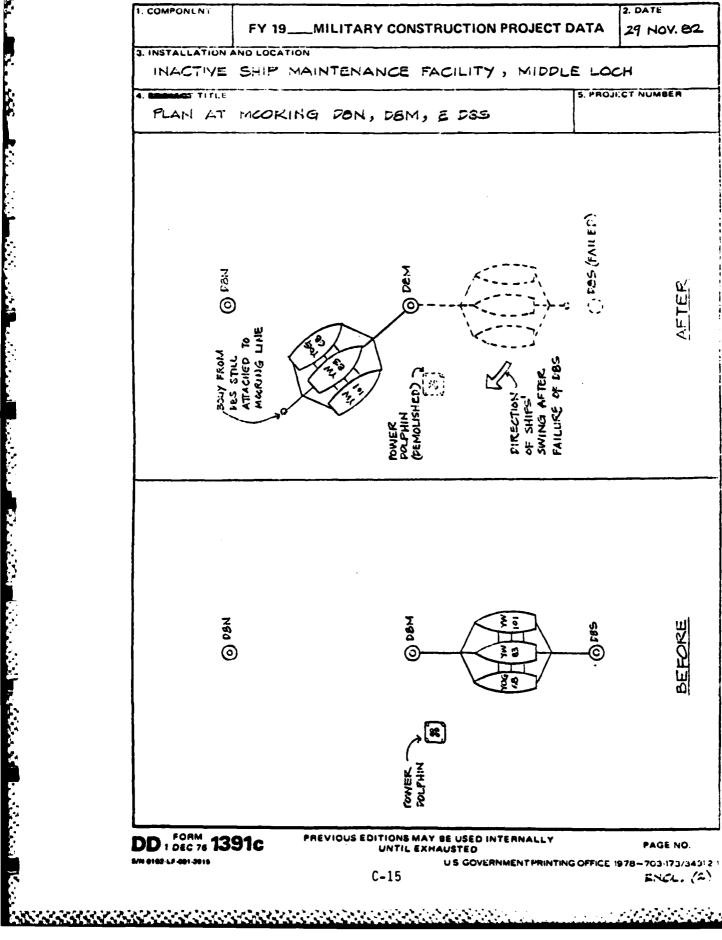


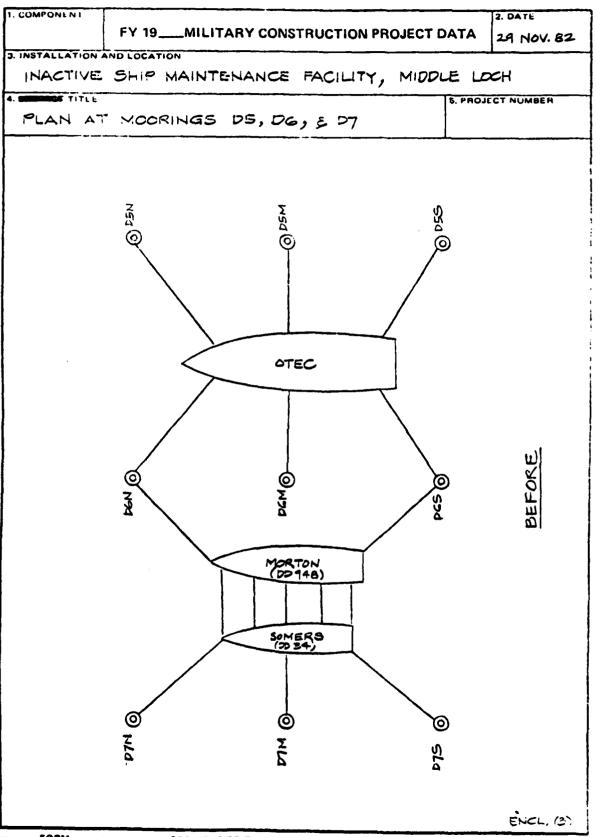
FIGURE 2 - PEARL HARBOR FLEET MOORING LOCATION PLAN



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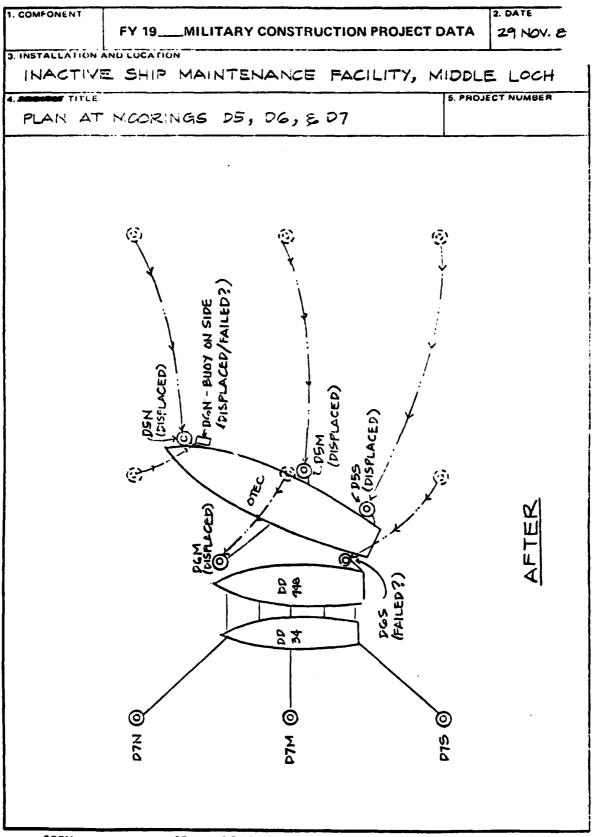


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